

### 3.7 HYDROLOGY, DRAINAGE, FLOODING AND WATER QUALITY

The following discussion is based on the Hydrology and Water Quality Technical Appendix prepared as part of the Moffett Park Specific Plan. The level of analysis prepared is compatible and consistent with the level of planning information available. All assessments and technical analyses in this discussion are in compliance with the local drainage policies and requirements for Santa Clara County, City of Sunnyvale, Santa Clara Valley Water District and the California Environmental Quality Act (CEQA) of 1970, as amended.

#### 3.7.1 Environmental Setting

The Moffett Park Specific Plan area is located in the northern most portion of the City of Sunnyvale. The Specific Plan area contains approximately 1,156 acres and is bounded by Moffett Federal Airfield to the west; the closed Sunnyvale Landfill, the Sunnyvale Materials Recovery and Transfer (SMaRT®) Station, and the City's Water Pollution Control Plan to the north; State Highway 237 to the south; and Sunnyvale Baylands Park to the east (refer to Exhibit 2-2, *Local Vicinity Map*).

#### REGIONAL HYDROLOGY

Sunnyvale has a Mediterranean Climate, with mild dry summer and cool wet winters. The average yearly mean temperature is 57.7 degrees Fahrenheit, with summer highs reaching 95 degrees and winter lows of 22 degrees. The average humidity ranges from 53-66%. Seasonal rainfall occurs primarily between the months of October and April, with average rainfall in the City ranging from 12-16 inches per year. Topography of the City slopes to the northeast with elevations varying from about 290 feet in the southern portion of the City to sea level near the proposed project area.

The Moffett Park Specific Plan area is located in the northernmost portion of the City of Sunnyvale and is generally divided from the developed City to the south by U.S. 101 and CA-237 freeways. Topography of the City slopes to the northeast with elevations varying from about 290 feet in the south portion of the City to sea level near the project area. The City is estimated to be approximately 97 percent built out (Sunnyvale Public Works Department, 1993).

Natural drainage courses convey rainfall runoff from the southwest portion of the City to Stevens Creek (west of the project area) and in the east to Calabazas Creek. Development throughout the City has decreased the amount of pervious ground surfaces and increased runoff volumes. The regional flood control agency is the Santa Clara Valley Water District and Flood Control Agency (SCVWD) responsible for providing flood control protection throughout Santa Clara County. To ensure flood protection of urbanized areas, the SCVWD constructed three open channels to increase drainage capacity to the bay: Sunnyvale West Channel, Sunnyvale East Channel, and the El Camino Channel. The Sunnyvale West Channel (Westside Channel) and the Sunnyvale East Channel (Eastside Channel) cross the project area from south to north (please see Exhibit 3.7-1).

The City is protected from encroachment of San Francisco Bay waters by a series of levees at its northern boundary. Some of these levees were constructed and remain in the ownership and operation of the Cargill Salt Company. The City owns and operates two storm water pump stations that lift storm

Exhibit 3.7-1 to be Included with Final Draft

Exhibit 3.7-2 / IV-19 to be Included with Final Draft

drainage from the project area and other low-lying portions of the City over the levees for discharge to the bay (refer to Exhibit 3.7-1).

Stormwater flooding has long been a continuing problem for much of Santa Clara County ever since the settlement of the valley floor began. Approximately 20% of the valley is flood prone (approximately 60 out of 300 square miles), and despite extensive, sustained efforts to provide adequate flood control, nearly 300 of the County's 700 miles of streams, creeks, and rivers are still incapable of carrying flows in the event of a 100-year flood. In addition, the amount of urban development in flood prone areas over the last 20-30 years has also dramatically increased the estimates of potential property damage from major flooding, while the increase in the amount of impervious surfaces from development increases total stormwater runoff. Floodwaters do not have to resemble torrential flows to produce great economic losses. The damage to utilities, roads, building foundations, crops and other properties can be devastating from even a foot of standing water.

### **LOCAL HYDROLOGY AND DRAINAGE**

The project area is served by two separately owned and operated drainage systems: the City of Sunnyvale and the Lockheed Missile and Space Company (LMSC). The layout of the City's storm drainage system has been identified from information shown on the City's Block Maps and the 600-scale citywide storm drain system map. The LMSC storm drain system was identified by reference to Lockheed's 1993 Storm Drain Master Plan.

The City has constructed a series of open channels, underground storm drains and catch basins that provide drainage of surface water from properties and streets. A 1991 estimate of the City storm drain system indicated approximately 140 miles of storm drain lines (Sunnyvale Public Works Department, 1993). A master plan was developed for the city storm drain system in 1958 and updated in 1967; however, these reports were unavailable for review for this project. The master plans established the design basis that the storm drain system pipes would flow full during a three-year design storm. Some of the major east-west drains in critical areas were designed for a ten-year design storm. Critical areas were identified as areas that if capacity were exceeded, would cause inconveniences to the public or the possibility of creating dangerous conditions. The 100-year storm event was used to size new pipelines in areas where streets slope downhill toward dead ends, such as cul-de-sacs.

The Lockheed Missile and Space Company (LMSC) owns approximately 555 acres of land within and adjacent to the project area, west of Mathilda Avenue, on which they operate a plant (known as Plant 1) as a national defense contractor. LMSC is actively converting portions of this site to commercial enterprise development. A flood control Master Plan was prepared for LMSC in 1993 that analyzed the hydraulic capacity of the storm drain system and made recommendations for system improvements (Brian Kangas Faulk, 1993).

Storm drainage from LMSC flows to the north through a series of open culverts and underground storm drains. The storm drains discharge to a series of four inter-connected detention ponds. LMSC operates a pump station (10,300 gpm capacity) that lifts the water from the ponds into the Sunnyvale West Side Channel, from which it flows by gravity to the San Francisco Bay.

The project area can be divided into the following five drainage basins:

- ❖ **LMSC Basin:** consists of the area generally west of Mathilda Avenue to the Moffett Field Golf Course boundary. The LMSC basin drains into the four LMSC detention ponds from where it is pumped into the West Side Channel.
- ❖ **Bordeaux Basin:** starts at the east side of Mathilda Road and extends approximately 300 feet east of the West Side Channel. The principal drain for this basin parallels the West Side Channel south of Java Drive to Carl Road and then to Pump Station No. 1.
- ❖ **Borregas Basin:** a storm drain in Borregas Avenue conveys drainage from the area east of the West Side Channel to the west side of Geneva Drive. The Borregas trunk flows north and enters a confluence with the Bordeaux drain at Carl Road and then flows east in an open channel to Pump Station No. 1.
- ❖ **Crossman Basin:** extends from approximately Geneva Drive east to the SCVWD Flood Control Channel. A drain in Crossman and an open channel parallel to the SCVWD Channel flow north across Caribbean Drive and then west into Pump Station No. 1.
- ❖ **Moffett Park Drive Basin:** consists of the area between the east side of the SCVWD Channel and Caribbean Drive. This basin is drained through a pipeline in Caribbean Drive that discharges into the SCVWD Channel.

Pump Station No. 1 receives the drainage of the Bordeaux, Borregas and Crossman Basins. The pump lifts storm flows above the levee system and discharges to a slough that flows into the San Francisco Bay. Pump Station No. 1 is equipped with two discharge pipes, 27-inch and 36-inch diameter in size. The discharge pipes are not equipped with flap gates or other device to prevent backflows.

The LMSC storm drainage flows from the LMSC ponds to the San Francisco Bay following discharge through the LMSC Pump Station.

The Moffett Federal Airfield occupies 1,108 acres of land west of LMSC, outside of the Specific Plan area boundary. An undetermined portion of the storm drainage from this site is pumped into Moffett Channel that runs along the northern boundary of the LMSC and discharges into the eastern LMSC pond.

## **FLOOD HAZARDS AND FLOOD CONTROL**

Flooding has been an ongoing problem for much of Santa Clara County since the earliest settlement of the valley floor. The regional flood control agency, the Santa Clara Valley Water District (SCVWD), is responsible for providing flood control protection throughout Santa Clara County. To ensure flood protection in urbanized areas, SCVWD constructed the Westside, Eastside, and El Camino Channels to increase drainage capacity to the bay. These channels cross the project area from south to north.

Much of the valley is flood prone (approximately 60 out of 300 square miles), and despite extensive, sustained efforts to provide adequate flood control, nearly 300 of the County's 700 miles of streams, creeks, and rivers are still incapable of carrying flows from a 100-year flood. In addition, the amount of urban development in flood prone areas over the last 20-30 years has dramatically increased the estimates of potential property damage from major flooding, while the increase in the amount of impervious

surfaces from development has increased the total volume of stormwater runoff. Floodwaters do not have to resemble torrential flows to produce great economic losses. The damage to utilities, roads, building foundations, crops and other properties can be devastating from even a foot of standing water.

Santa Clara Valley is essentially an active flood plain that has been severely altered by human activity and it is still subject to periodic flooding from excessive rain. Flooding may also occur in the event of tidal flooding, dam failure, tsunamis or a combination of these events. The City of Sunnyvale maintains an extensive storm drain system and the SCVWD maintains the channels of Calabazas Creek, Stevens Creek, and the Eastside, Westside and El Camino Flood control channels. These channels, coupled with the City's storm drains, take the majority of surface runoff to the bay. Tidal flooding could occur if the system of dikes and levees failed or their banks overflowed.

Approximately 50% of the project area is located within a 100-year flood plain, and some areas are susceptible to 500-year flooding (please see Exhibit 3.7-2).

## **EXISTING WATER QUALITY AND WATER QUALITY CONTROLS**

### ***Types and Sources of Urban Runoff Pollutants***

Pollutants found in urban runoff can be classified by the type of land use activity that generates them. General classifications include Agricultural, Landscape, Transportation, Construction, and Disposal. Typical sources of these pollutants include agricultural practices of fertilizer and pesticide application, outdoor washing activities that flow into storm drains and surface waters, deposition of contaminants released into the atmosphere (either direct deposition or washed from the atmosphere during rain events), soils that become exposed during construction activities, pollutants from automobiles, and improper disposal or contaminant spills.

The first rains after a dry summer season produce what is known as the "first flush" of pollutants. First flush describes the washing action that stormwater has on accumulated pollutants in the watershed. During the early stages of a storm, land surfaces, and especially impervious surfaces such as streets or parking lots, are flushed of many pollutants by the rainfall and resulting runoff. This flushing action creates a shock loading of pollutants in the runoff, which flows untreated into local waterways via the storm drain system. Urban runoff studies conducted in areas with a variety of land uses have indicated that capturing and treating the first ¼- to ½-inch of storm water runoff will result in an 80 to 95 percent reduction of pollutants contributed to runoff.

The most abundant heavy metals in urban stormwater are lead, zinc and copper, which together account for 90% of the dissolved heavy metals.

### ***Characteristics and Measures of Surface Water Quality***

The physical properties and chemical constituents of water traditionally have served as the primary means for monitoring and evaluating surface water quality. Evaluation of water quality refers to the physical, chemical, or biological characteristics of the water. In many cases, the concentration of an urban pollutant, rather than the annual load is needed to assess water quality. Concentrations of urban pollutants can be expressed as expected maximum concentration (EMC). EMC occurs over a specified time interval.

Dissolved oxygen concentration has a pronounced effect on the aquatic organisms and the chemical reactions that occur within a body of water. The dissolved oxygen concentration of a water body is determined by temperature, salinity, and biological activity. Dissolved oxygen is a transient property that can fluctuate rapidly in time and space. Dissolved oxygen concentrations are commonly measured by the oxygen demand within a body of water. There are several measures of oxygen demand commonly used. The chemical oxygen demand, or COD, is the amount of oxygen needed to oxidize the wastes chemically, while the biological oxygen demand, or BOD, is the amount of oxygen required by microorganisms to degrade the wastes biologically.

**Table 3.7-1**  
**Typical Urban Pollutants and Sources**

Pollutant Groups	Examples	Sources
Particulates	Dust and dirt, stones, sand, gravel, grain, glass, plastics, metals, fine residues	Tire, brake, and pavement wear, car exhaust, mud and dirt accumulation on vehicles
Heavy Metals	Lead, zinc, iron, copper, nickel, cadmium, mercury	Use of leaded fuels, tire and brake wear, motor oil additives, rust
Organic Matter	Vegetation, dust and dirt humus, oils, fuels	Vegetation, litter, animal droppings, motor fuels and oils
Pesticides and herbicides	Pesticides, weed killers	Right-of-way maintenance
Nutrients	Nitrogen, phosphorus	Fertilizers
Pathogenic bacteria (Indicators)	Coliform	Soil, litter, excreta, bird and animal droppings

Source: RBF Consulting, 2002

Total Dissolved Solids (TDS) are calculated by determining the weight of the dissolved solids in comparison to the total volume of the water sample. TDS is an important measurement because dissolved solids can affect ionic bonding strength, aquatic habitability, dissolved oxygen and assimilation of wastes. Another indicator of TDS is the specific conductance of water. Specific conductance is the ability to conduct an electrical current through the water.

The pH, an indicator of acidity or alkalinity, is an indicator of the chemical equilibrium in surface water. The pH level indicates the capacity for chemical uptake by plants and the survivability of aquatic organisms. In natural waters, carbon dioxide reactions are important in establishing pH.

Alkalinity is the opposite of acidity, representing the capacity of water to neutralize acid. Alkalinity is caused by the presence of carbonate, bicarbonate, and hydroxide, which are formed when carbon dioxide is dissolved. A high alkalinity is associated with a high pH and excessive solids. Most streams have alkalinities less than 200 mg/l and ranges of alkalinity of 100 – 200 mg/l seem to support well-diversified aquatic life.

Turbidity is an indicator of light's ability to penetrate the water. Light is needed in bodies of water to support aquatic and biological life. Sediments, silts, and chemical solids can increase the turbidity of water.

Ammonia and nitrate are important nutrients for the growth of aquatic plants, however excessive concentrations can lead to the eutrophication of a stream or body of water. Common sources of nitrogen-based pollutants are chemical and organic matter. Typical measurements of nitrogen include total Kjeldahl nitrogen (organic nitrogen plus ammonia), ammonia, nitrate, and nitrogen in plants.

Phosphorus is important, and frequently a limiting factor, for biological activity. The origins of phosphorus in urban stormwater discharge are fertilizers and other industrial products. Orthophosphate is soluble and is considered to be the only biologically available form of phosphorus. Methods of phosphorus measurement include detecting orthophosphate and total phosphorus.

### ***Pollutant Mass Loadings***

The cumulative contributions from runoff sources can be estimated in terms of mass loadings. This technique is useful in characterizing the variations in quality and quantity of discharge as well as the randomness of rainfall events. The mass-loading rate is the amount of pollutant transported from a watershed area during a defined time and rain quantity. The average annual pollutant loading can be useful for estimating changes in pollutant loadings and long-term impacts of the transport of urban pollutants in receiving waters. Researchers have developed standardized curves that indicate estimated annual loadings for various land uses. These values can be used as a benchmark to compare values developed in the monitoring program for the urban areas.

The event mean concentration (EMC) is commonly used in stormwater quality evaluations and is defined as the pollutant load for the event divided by the total storm volume. There is great variability in loading from one storm to another and from one location to another. The greater the number of events sampled, the more accurate the estimates of mean concentration and loading rates.

It is generally not considered feasible at this time to establish numeric effluent limitations for pollutants in municipal stormwater discharges. Instead, the provisions of the current NPDES permit require implementation of Best Management Practices to control and abate the discharge of pollutants in stormwater discharges. (Source: NPDES Permit No. CAS029718, Revised Order 01-024, California Regional Water Quality Control Board, San Francisco Bay Region).

### ***Existing Water Quality Controls***

Water quality can be degraded through the introduction of urban pollutants. In developed areas, impervious surfaces such as roofs, paved parking lots and streets direct surface flow into storm drain systems, which, in turn, convey the runoff directly into local streams and other watercourses. Urban pollutants (e.g., oils, grease, heavy metals, pesticides) may be introduced into surface water flows through runoff. Runoff from roadways, for example, particularly during the first rainstorm of the year, can contribute a substantial amount of urban pollutants unless protections are in place to prevent these pollutants from entering the storm drain system. Urban runoff is becoming increasingly acknowledged as a primary contributor to the pollution of surface waters throughout the state.

New construction can also introduce sediments into surface water systems as they may be washed into waterways if not retained on construction sites or directed away from water channels. Erosion that occurs on construction sites can also add sediments to waterways.



The source of urban pollutants varies widely depending upon the local conditions, activities, and watershed characteristics. Urban runoff pollutants typically include litter, fertilizers and pesticides from landscaped areas, and vehicle-related materials deposited on street surfaces such as grease, oil, and heavy metals. The impact of the higher export of pollutants is felt not only on the adjacent streams, but also on the downstream receiving waters. Receiving waters can assimilate a limited quantity of each constituent of the contaminated runoff, but there are thresholds beyond which the measured amount becomes a pollutant and results in an undesirable impact. In addition to urban runoff, erosion and sedimentation from agricultural practices and construction activities are also a significant contributor to stormwater pollution.

#### ***National Pollution Discharge Elimination System and Urban Runoff Management Plan***

The City of Sunnyvale works jointly with all municipalities in Santa Clara Valley and the Santa Clara Valley Water District (SCVWD) to control the discharge of pollutants in surface runoff. In 1987, Congress recognized the potential adverse effects of urban runoff on water quality and amended the Clean Water Act to require that National Pollutant Discharge Elimination System (NPDES) permits be obtained for urban stormwater discharges. Permits require their holders to carry out State-approved management plans, which are designed to control contaminants to the “maximum extent practicable”. The plans typically call for a broad range of best management practices (BMPs), primarily non-structural measures such as street sweeping, catch basin and basin cleaning, litter control and public education programs.

Area-wide NPDES permits to discharge stormwater from urban areas in Santa Clara County have been issued and reissued by the Regional Water Quality Control Board (RWQCB) since 1990. The City of Sunnyvale is one of fifteen co-permittees comprising the Santa Clara Valley Urban Runoff Pollution Prevention Program, to whom the permits have been issued. The other co-permittees include other municipalities within the valley, the SCVWD, and the County of Santa Clara. A committee, made up of one designated voting representative from each co-permittee administers the Program, conducts area-wide activities, and prepares and submits annual reports and other documents to the RWQCB. The co-permittees develop individual urban runoff management plans and are responsible for carrying them out within their jurisdictions. The City of Sunnyvale’s Urban Runoff Management Plan contains implementation strategies and specific performance standards to address stormwater pollution prevention in the following areas: 1) illicit connections/illegal dumping; 2) industrial/commercial dischargers; 3) public streets and roadways; 4) storm drain system operation and maintenance; 5) water utility operation and maintenance; 6) new development and construction controls; 7) public information and participation; and 8) public facilities maintenance. An amendment made to the current NPDES permit in October 2001 has made the requirements for implementation of post-construction BMP’s and monitoring of their operation and maintenance considerably more stringent than the previous provisions of the permit.

Each year the City of Sunnyvale submits an annual report on its Urban Runoff Management Plan, in conjunction with the Santa Clara Valley Urban Runoff Pollution Prevention Program’s Annual Report, to the RWQCB. The annual report documents the implementation of the Management Plan during the past fiscal year, evaluates program results, and provides information to share with the other co-permittees, municipal decision-makers and the public.

### 3.7.1 Environmental Impacts and Mitigation Measures

#### HYDROLOGY AND DRAINAGE IMPACTS

##### *Thresholds of Significance*

##### CEQA Guidelines

The following thresholds of significance, based on the criteria contained in Appendix G of the State CEQA Guidelines, as amended January 2, 2002, will be used to determine whether or not implementation of the proposed Moffett Park Specific Plan would result in significant hydrology or drainage impacts. Impacts would be considered significant if implementation of the Specific Plan would result in:

- ❖ Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff.
- ❖ Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- ❖ Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- ❖ Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

##### Other Agency Thresholds

In addition to the above criteria, the following relevant local City policies and action statements are used to assess potential impacts resulting from future implementation of the proposed Specific Plan:

#### Relevant Policies and Action Statements

##### Surface Runoff Sub-Element

- 3.1C.1b.      *Develop and maintain standard operating procedures for responding to losses of supply of water contamination events.*

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**IMPACT 3.7-A**      **Impacts to Stormwater Drainage System Capacity: Implementation of the Specific Plan would result in a decrease in runoff for the 10-year and 100-year storm events in all sections of Moffett Park resulting in a less-than-significant impact to hydrology. (Less Than Significant Impact).**

##### *Impacts to Stormwater Drainage System Capacity*

The proposed Moffett Park Specific Plan would alter the existing hydrologic conditions in the project area by facilitating redevelopment or re-utilization of previously under-developed sites, and by facilitating construction of higher density buildings, parking lots, roads and landscaped areas. The existing project area consists primarily of light industrial land uses that typically contain single-story warehouse-type facilities, and are heavily paved and developed, with minimal open space. The proposed Specific Plan

would encourage the incorporation of a greater amount of landscaping, resulting in an overall reduction in the amount of impervious surface area throughout the Specific Plan area. The project area would be developed pursuant to the Design and Development Standards as contained within the Moffett Park Specific Plan, which calls for a minimum of 20% of the net lot area to be landscaped within all zoning districts within the Specific Plan.

A hydrologic analysis was performed to determine the current state of the project area, and how the storm flows within the project area are handled. Previous hydrology models around the project area had used the Continuous Hydrologic Simulation (CHS) as the method of analysis; however, due to the preliminary nature of the proposed Specific Plan, the CHS model was determined not to be an efficient or effective way to model the proposed project. Instead, the Rational Method was used based on its ability to accurately model land areas of this shape and terrain.

Analysis of the Moffett Park Specific Plan area storm drain system was performed using existing and proposed levels of development. The area is divided into 7 analysis sections. Within each analysis section are multiple parcels, as designated by the Assessors Parcel Number (APN) obtained from the City of Sunnyvale. Dimensional properties of each parcel were obtained from GIS data provided by the City of Sunnyvale. Data includes acreage, perimeter, and existing floor area ratio (FAR). The proposed FAR values for each parcel were obtained from the proposed Moffett Park Specific Plan. These seven analysis sections divided the parcels into groupings based on location and proposed development levels. Exhibit 3.7-1 shows the seven analysis sections.

### **Future Conditions**

Anticipated storm water runoff from future development conditions was estimated using GIS data provided by the City of Sunnyvale, the Santa Clara County Drainage Manual, and the proposed development intensity of the Moffett Park Specific Plan. Land use and landscape requirements were applied to each section to determine the ratio of pervious to impervious surface area. A composite runoff coefficient was determined for each section, based on a factored weight value corresponding to the ratio of surface characteristics. The runoff coefficients used for each surface was based on county standards. Parcels were assumed to remain unchanged in size, location, and lot line alignment to facilitate comparison of existing and future conditions.

Using the Rational Method, storm water runoff was estimated for existing and anticipated future land use conditions. The time of concentration ( $t_c$ ) for each parcel was assumed to be 5 minutes, which provides the “worst-case scenario” for runoff quantities. The rainfall intensity ( $I$ ) was determined from standard tables using a 10 and 100-year design storm and the calculated  $t_c$ . The quantity of storm water runoff produced by each parcel was calculated using the Rational Method according to the following equation:

$Q=cIA$ , where:

“Q” is storm water runoff quantity;

“c” is the runoff coefficient;

“I” is rainfall intensity; and

“A” is land area.

## Hydrology Comparison

The hydrologic performance of the project site was determined for the current land use and the proposed development. The analysis was determined for a 10-year storm and a 100-year design storm. The following tables display the resulting reductions in stormwater runoff for each hydrologic section in the project area, for both the 10-year and 100-year storm events. Runoff is measured in cubic feet per second (cfs).

Table 3.7-2 Hydrology Comparison (10-year Storm)			
Hydrologic Section	Existing Conditions (cfs)	Proposed Conditions (cfs)	Percent Reduction
1	871	780	10 %
2	167	131	22 %
3	218	170	22 %
4	316	254	20 %
5	304	246	19 %
6	200	153	24 %
7	462	374	19 %
Total	2538	2108	17 %
Source: RBF Consulting, July 2002.			

Table 3.7-3 Hydrology Comparison (100-year Storm)			
Section	Existing Conditions (cfs)	Proposed Conditions (cfs)	Percent Reduction
1	1254	1123	10 %
2	241	188	22 %
3	314	245	22 %
4	455	365	20 %
5	438	354	19 %
6	288	220	24 %
7	665	539	19 %
Total	3655	3034	17 %
Source: RBF Consulting, July 2002.			

The hydrology analysis determined that for both a 10-year and a 100-year design storm, the amount of discharge of each section would decrease after future development, when compared to current land use. The decrease of discharge per section varies, but the decrease for the entire project area is 17% for both modeled design storm events. As shown, with implementation of the proposed project, the hydrologic conveyance in all sections of Moffett Park would be reduced from existing levels for the 10-year and 100-year storm events resulting in a less-than-significant impact to hydrology. Therefore, no improvements are necessary for the existing storm drains system because the City of Sunnyvale has indicated that flooding is currently not a problem within the project area. If individual projects within the boundaries of

the Specific plan area are not developed to City and Specific Plan standards, then a separate hydrologic analysis will need to be completed to determine if any mitigation is required to offset increased storm flow.

**Mitigation 3.7-A**

***Impacts to Stormwater Drainage System Capacity: No mitigation is required (Less Than Significant Impact).***

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**IMPACT 3.7-B**

**Impacts to Stormwater Drainage Infrastructure: Improper drainage system design and lack of maintenance could potentially cause impacts to existing drainage systems. (Potentially Significant Unless Mitigated).**

All new development will require new connections into existing drainage lines and/or the development of new drainage systems. The size, location and conveyance capacity of new distribution lines needs to be reviewed in the context of the existing infrastructure into which it will connect. Moreover, all drainage distribution lines will need to be periodically maintained, in accordance with City of Sunnyvale standards. Improper drainage system design and lack of maintenance could potentially cause significant impacts to existing storm drainage systems.

**Mitigation 3.7-B**

***Impacts to Stormwater Drainage Infrastructure: Prior to the approval of new development applications, the City of Sunnyvale will incorporate the following measures into the conditions of approval for all new development, as applicable.***

- ❖ *The property owner/developer shall maintain all drainage facilities on a quarterly basis, or as required by programs established by the City. This maintenance shall be recorded, and copies of applicable reports sent to the City of Sunnyvale.*
  - ❖ *The City of Sunnyvale shall require all new development to label new storm drain inlets. (Less Than Significant With Mitigation).*
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## **ALTERATION OF DRAINAGE PATTERNS IMPACTS**

### ***Thresholds of Significance***

#### **CEQA Guidelines**

The following thresholds of significance, based on the criteria contained in Appendix G of the State CEQA Guidelines, as amended January 2, 2002, will be used to determine whether or not implementation of the proposed Moffett Park Specific Plan would result in significant hydrology or drainage impacts. Impacts would be considered significant if implementation of the Specific Plan would result in:

- ❖ Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site.
- ❖ Substantial alteration of the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

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**IMPACT 3.7-C**

**Alteration of Drainage Patterns: Implementation of the proposed Moffett Park Specific Plan could indirectly result in the alteration of existing drainage patterns that could result in increases in erosion and siltation rates that adversely affect water quality, thereby resulting in a potentially significant impact. (Potentially Significant Impact If Not Mitigated).**

Implementation of the proposed Moffett Park Specific Plan would allow for an increase in development intensity and density within the Plan area, but would not directly alter existing drainage patterns. Site grading associated with future, individual development projects under the direction/guidance of the proposed Moffett Park Specific Plan could alter surface topography that could affect drainage patterns. Altered drainage patterns could result in increases in erosion and siltation rates that could adversely affect water quality. This would be considered an indirect, but nevertheless potentially significant impact unless mitigation is incorporated.

**Mitigation 3.7-C**

***Alteration of Drainage Patterns: The following mitigation measures shall be considered by the City of Sunnyvale and incorporated, to the extent feasible, in future development applications within the Moffett Park Specific Plan area. These measures would reduce the potential water quality impacts resulting from construction and site grading within the Specific Plan area:***

- ❖ ***Future development shall minimize the amount of onsite grading required to the extent feasible, and maximize the amount of landscaping in the project design (a minimum of 20% of parking lot areas must be landscaped).***
- ❖ ***All proposed development shall comply with the requirements of the NPDES Permit regarding construction practices, including filing of a Notice of Intent with the Regional Water Quality Control Board, and the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). Construction Best Management Practices shall be outlined in the SWPPP prior to the commencement of grading on the site, and shall include elements regarding construction site planning, housekeeping practices and material storage, vehicle and equipment fueling and maintenance, erosion and sedimentation controls, slope stabilization, dust control, road and construction entrance stabilization, storm drain inlet protection, and temporary drainage systems.***

## GROUNDWATER RECHARGE IMPACTS

### *Thresholds of Significance*

#### CEQA Guidelines

The following thresholds of significance are based on Appendix G of the State CEQA Guidelines. For the purposes of this project, a ground water recharge quality impact is considered significant if the project would:

- ❖ Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

#### Other Agency Thresholds

No other agency thresholds have been identified.

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#### **IMPACT 3.7-D**

**Groundwater Recharge Impacts: Implementation of the proposed Moffett Park Specific Plan would reduce impervious surface area, thereby allowing for additional groundwater recharge. However, since 15% of the City's water supply is based on ground water supply, additional mitigation measures should be considered. (Less than Significant Impact).**

The Moffett Park Specific Plan would not result in the need for new wells or for a substantial increase in the use of well water to the extent that it would deplete groundwater supplies or interfere with groundwater recharge. Since approximately 15% of Sunnyvale's water supply comes from the City's ground water supply, it is essential to reduce the impacts created by the creation of impervious surfaces. The hydrologic analysis conducted for the project indicates that the reduced impervious surface area proposed with the proposed Specific Plan would result in less than current runoff volumes. Reduced impervious surface area would provide increased opportunities for groundwater recharge due to stormwater infiltration. The water supply system improvements required to accommodate development under the Moffett Park Specific Plan will be implemented by the City of Sunnyvale as needed. While the project would reduce impervious surface area and, thereby, allow for increased groundwater recharge (a less than significant impact), additional mitigation is recommended.

#### **Mitigation 3.7-D**

***Groundwater Recharge: During the review of applications for new development, the City of Sunnyvale shall consider all opportunities to incorporate open space to enhance groundwater recharge to allow additional percolation of surface waters into the ground. (Less Than Significant With Mitigation).***

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## FLOODING IMPACTS

### *Thresholds of Significance*

The following thresholds of significance are based on Appendix G of the State CEQA Guidelines as they apply to potential project impacts. For the purposes of this project, a water quality impact is considered significant if the project would:

- ❖ Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- ❖ Place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- ❖ Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- ❖ Inundation by seiche, tsunami, or mudflow?

### *Relevant Policies and Action Statements*

The City of Sunnyvale's General Plan (Sunnyvale Public Works Department, 1993) includes policies adopted maximize flood protection to the extent practicable. Relevant sub-element policies include the following:

#### Surface Runoff Sub-Element

- 3.4A.3f. *Encourage private property owners to label storm drains inlets.*
- 3.4B.1a. *Inspect and clean as necessary all storm drainage inlets at least one a year prior to the rainy season.*
- 3.4B.1e. *Assure proper disposal of all material cleaned from storm drain inlets and lines.*
- 3.4.3m *In addition to sweeping streets for aesthetic purposes, sweep to prevent pollutants from entering storm drain inlets. Similarly, in addition to cleaning storm drain inlets. Similarly, in addition to cleaning storm drain inlets to prevent flooding, clean inlets to remove pollutants from the storm drain system. The "BMPs for Street Cleaning and Storm Drainage Facilities" developed by the Alameda County Urban Runoff Clean Water Program may be used as guidance.*

#### Seismic Safety Sub-Element

- 2.4A.2 *Take measures to protect life and property from the effects of a 1% (100-year) flood.*



Municipal Code

19.38.070 (d)(3) *Landscape areas and parking islands shall be designed to integrate parking lot and site drainage in order to reduce storm water runoff velocities and minimize non-point source pollution*

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**IMPACT 3.7-E**

**Flooding Impacts: Implementation of the proposed Moffett Park Specific Plan would not alter flood plain boundaries, but would incrementally increase the risk of exposure to people and property in the event of a flood event, which is considered a potentially significant. (Potentially Significant Impact If Not Mitigated).**

The elevations of the project area will not be altered substantially with the implementation of the Specific Plan, as no significant grading is proposed. Therefore, the areas that are currently in floodplains will likely remain in floodplains.

Flooding could occur in the City of Sunnyvale in the event of excessive precipitation, tidal flooding, dam failure, tsunamis or a combination of any of these events. The SCVWD maintains the channels of Calabazas Creek, Stevens Creek, East, West and El Camino Flood control channels. These channels, coupled with the City's storm drains, direct the majority of surface runoff to the bay. Tidal flooding could occur in the system of dike and levees along the San Francisco Bay failed or their banks overflowed

The most recent floodplain mapping available for the site is shown on Exhibit 3.7-2. The data for the map was provided by the National Flood Insurance Program (NFIP) and the City of Sunnyvale GIS system. Implementation of the Moffett Park Specific Plan would result in the intensification of uses in the project area, but would not introduce new development into areas that are not already urbanized. The elevations of the project area would not be altered substantially with the implementation of the proposed Specific Plan, as no significant grading is proposed. With the intensification of use allowed by the Specific Plan (i.e., up to approximately 24.4 million square feet of development potential), there is the potential for an increase in exposure of people and property to flood hazards within the 100-year and 500-year floodplain areas. However, since the location of developed areas would not substantially differ than existing conditions, the areas that are currently in floodplains will likely remain in floodplains. The increased risk of flood hazard to people or property is a potentially significant impact.

**Mitigation 3.7-E**

***Flooding Impacts: The following mitigation measures shall be applied prior to the City's approval of new development applications within the Specific Plan area.***

- ❖ *Utilize most recent FEMA flood zone map to prevent inappropriate development in areas subject to flooding.*
  - ❖ *All new development or substantial improvement within necessary flood zones shall obtain a Flood Elevation Certificate and meet all municipal code requirements. New development shall show evidence of compliance to this requirement prior to receiving certificates of occupancy.*
-

## IMPACTS TO SURFACE WATER QUALITY

### *Thresholds of Significance*

The purpose of technical analysis regarding water quality is to determine the impact of the proposed project on surface water drainage and stormwater quality within the City of Sunnyvale, Santa Clara County and the San Francisco Bay. Should the analysis determine that the proposed project significantly impacts surface water drainage or stormwater quality, mitigation measures will be identified to minimize the project impact to a less than significant level.

The following questions, selected from those found in the San Francisco Bay Regional Water Quality Control Board revised NPDES Permit for the project area relative to water quality, will be used as the criteria upon which to evaluate the water quality impacts and levels of significance associated with the proposed project.

- ❖ Will the proposed project result in an increase in pollutant discharged to receiving water?
- ❖ Will the proposed project result in significant alteration of receiving water quality during or following construction?
- ❖ Will the proposed project result in increased erosion of its watershed?
- ❖ Is the project tributary to an already impaired water body, as listed on the Clean Water Act Section 303 (d) list? If so, will it result in an increase in any pollutant for which the water body is already impaired?
- ❖ Will the proposed project have a potentially significant environmental impact on surface water quality, to marine, fresh, or wetland waters?
- ❖ Will the proposed project have a potentially significant adverse impact on ground water quality?
- ❖ Will the proposed project cause or contribute to an exceedance of applicable surface or groundwater receiving water quality objectives or degradation of beneficial uses?
- ❖ Will the project impact aquatic wetland or riparian habitat?

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### **IMPACT 3.7-F**

**Surface Water/Stormwater Quality Impacts: Implementation of the proposed project could generate contaminated runoff during the construction and post-construction phases that could violate water quality standards and discharge requirements specified by the State Water Resources Control Board, which would be a potentially significant impact. (Potentially Significant Impact If Not Mitigated).**

The following paragraphs summarize the potential impacts to surface water and stormwater quality that would result from implementation of the proposed Specific Plan.

### *Water Quality Standards and Waste Discharge Requirements*

Implementation of the proposed Moffett Park Specific Plan would not directly result in future development that violates water quality standards or waste discharge requirements. Future development projects under the guidance/direction of the proposed Specific Plan could, however, generate contaminated runoff during the construction and post-construction phases that could violate water quality standards and discharge requirements specified by the State Water Resources Control Board (SWRCB). This would be considered a potentially significant impact unless mitigation is incorporated.

All development projects proposed on sites greater than five acres (greater than one acre effective April 2003), or as acreage limits are revised by the SWRCB, within the City are required to file a Notice of Intent (NOI) to comply with the terms of the State of California's General Permit for construction activities to Discharge Storm Water Associated with Construction Activity from the SWRCB prior to construction. Prior to the commencement of grading on the site, the project applicant must prepare a Stormwater Pollution Prevention Plan (SWPPP) that describes the proposed stormwater pollution control practices to be implemented during construction of the project. The SWPPPs prepared by project applicants will be reviewed by the City of Sunnyvale for conformance with the Santa Clara Valley Urban Runoff Pollution Prevention Program's recommended Best Management Practices (BMPs) for construction activities and the performance standards of the City's Urban Runoff Management Plan. Construction BMPs typically required to be demonstrated in SWPPPs include site planning techniques and housekeeping practices, material and equipment storage methods, construction vehicle maintenance, installation of erosion and sediment control measures, storm drain inlet protection, slope stabilization techniques, and temporary drainage facilities.

The City of Sunnyvale's Urban Runoff Management Plan contains implementation strategies and specific performance standards to address stormwater pollution prevention in the following areas: 1) Illicit Connections/Illegal Dumping; 2) Industrial/Commercial Dischargers; 3) Public Streets and Roadways; 4) Storm Drain System Operation and Maintenance; 4) Water Utility Operation and Maintenance; 5) New Development and Construction Controls; 6) Public Information and Participation; and 6) Public Facilities Maintenance. The New Development and Construction Controls element of the Plan requires the incorporation of stormwater control measures in new development and redevelopment projects in conformance with the recently adopted amendment of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES) Permit. All new development and redevelopment projects within the Specific Plan that proposes the creation or replacement of 500 square feet or more of impervious surface area will be required to incorporate appropriate stormwater control measures.

Post-construction stormwater quality controls must be incorporated into the designs of future development projects within the Specific Plan area. The City's Community Development Department will review development proposals for conformance with recommended BMPs and performance standards contained in the Urban Runoff Management Plan. Site planning should include techniques to minimize the amount of impervious surface area within the project such as the use of alternative/pervious paving materials, reduction of road widths and parking ratios, and disconnection of roof drains from paved surfaces and storm drains. Typical post-construction BMPs include structural controls such as oil/water separators and inlet filters, and/or landscape-based controls such as vegetative swales and on-site detention areas.

Conformance with the state and local requirements for the prevention of construction-related stormwater pollution, and conformance with the design requirements for incorporation of post-construction

stormwater quality control measures as described above will reduce impacts related to violations of water quality standards and waste discharge requirements to less than significant levels.

#### *Water Quality Degradation*

Stormwater quality is affected by the length of time between rainfall events, rainfall intensity, urban uses of the area, and the quantity of transported sediment. Typical urban water quality pollutants usually result from motor vehicle operations, oil and grease residues, fertilizer/pesticide uses, litter, animal waste, careless material storage and handling, and/or poor property management. Activities associated with future development within the Specific Plan area would likely produce such pollutants. The majority of pollutant loads are usually washed away during the first flush of the storm occurring after the dry-season period. The amount of pollutants washed off the street surface is a function of the amount of pollutants on street surfaces and the rainfall amount. EPA has developed a relationship between rainfall and the percent of contaminant removal:

<u>Rainfall (inches)</u>	<u>Percent Removal</u>
0.50	90
0.27	70
0.15	50
0.08	30
0.02	10

(Source: *Water Quality Management Planning for Urban Runoff*, USEPA, 1975.)

Although these figures reflect the assumption made by the EPA was that all rainfall would become runoff (which is not necessarily true), they clearly illustrate the role of impervious surfaces in the transport of contaminants. Since contaminant removal is also proportional to runoff rate, which is determined by impervious surface area, reducing the amount of impervious surface area becomes the critical factor in the removal of stormwater contaminants.

As illustrated in the previous discussion, new construction and development within the Specific Plan area has the potential to contribute sediment and other contaminants to local waterways. The implementation of construction and post-construction stormwater quality controls will reduce the impacts of the new development. However, the significance of the water quality impacts generated by the implementation of the Specific Plan will also be reduced by the overall reduction in impervious surface area proposed by the Specific Plan. The results of the previously referenced hydrologic analysis showed an overall decrease in the amount of impervious surface area within the Specific Plan, as compared with the existing conditions, resulting in lower runoff volumes. By reducing runoff volumes, the project would also be expected to consequently reduce pollutant loadings, thereby minimizing the degradation of water quality in the local receiving waters.

#### **Mitigation 3.7-F**

***Surface Water/Stormwater Quality Impacts: Implementation of Mitigation Measure 3.7-C, above, would reduce Surface Water/Stormwater Quality Impacts to a Less-than-Significant Level. (Less Than Significant Impact With Mitigation)***

## 3.8 LAND USE AND PLANNING

### 3.8.1 Environmental Setting

#### BACKGROUND DISCUSSION

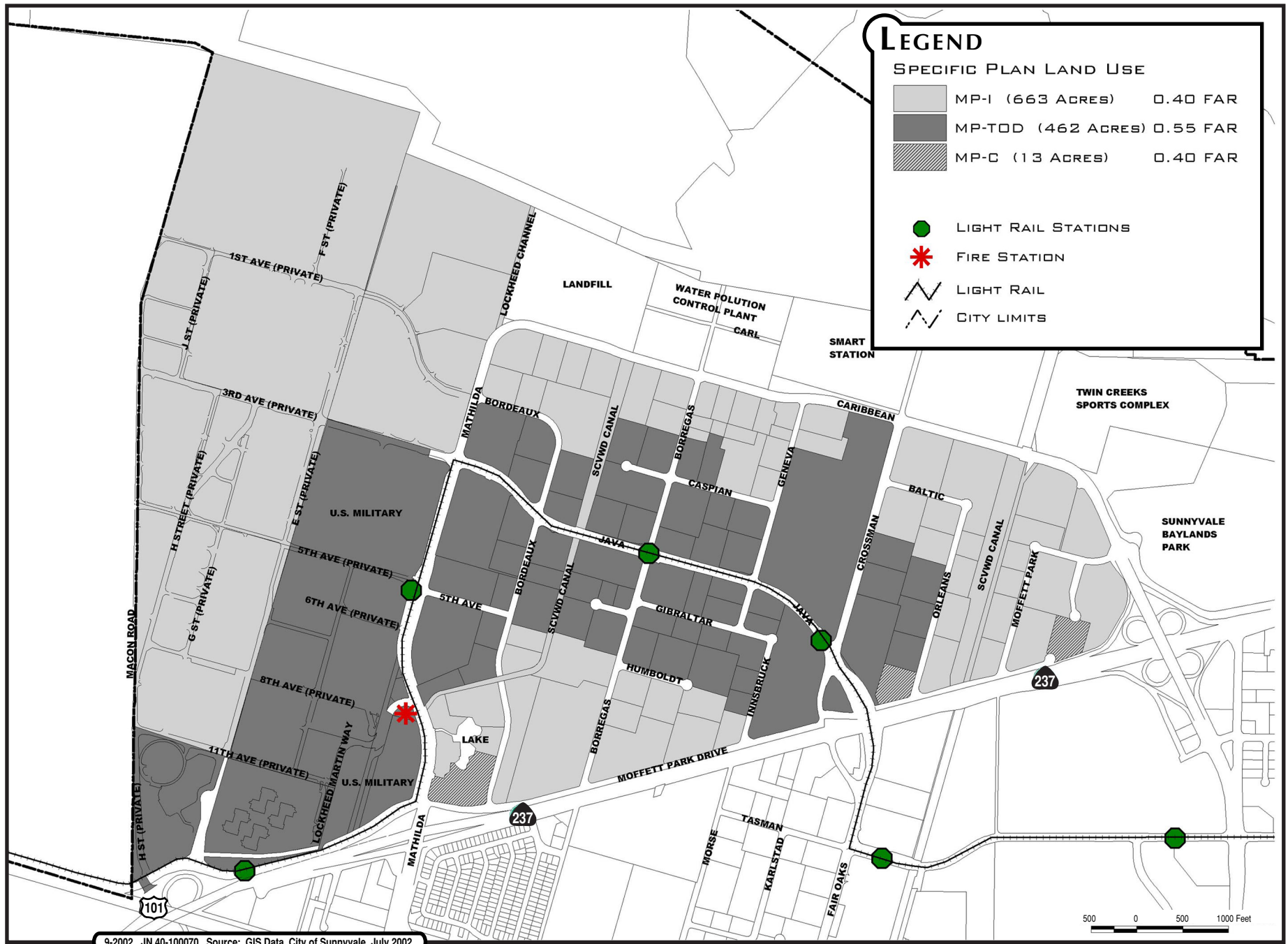
The City of Sunnyvale experienced rapid growth from the 1950's, when it started to become a center of high technology, until the 1970's. Since then the City has grown through infill development, redevelopment and neighborhood revitalization. Early development concentrated near railroad stations downtown, and was a balanced mix of businesses, industry and homes. Most of the City's growth occurred in the 1950's and 1960's, with development after 1950 being concentrated in large tracts developed exclusively for a single type of land use. This development was horizontal, spread out, and oriented to the automobile. A zoning code enforcement program was started in 1980. As an expansion of this program, the City of Sunnyvale established a Neighborhood Preservation Program in 1987 to preserve and enhance the health, safety and general welfare of the neighborhoods. This program includes public education regarding code compliance issues, proactive staff action and development of new regulations to address rehabilitation needs.

#### EXISTING LAND USES

Moffett Park is characterized as a business park, with the predominant land uses consisting of high tech industrial, light industrial, light manufacturing and interspersed commercial uses. Moffett Park has historically been occupied by the defense industry. The Air Force, the Navy, and Lockheed Martin are major organizations that have operated or continue to operate in Moffett Park. The Navy maintains industrial and office buildings in the northwest portion of the site. The eastern portion is characterized by office commercial, retail commercial, light industrial, and hotel uses. The Lockheed Martin headquarters campus is located in the central portion of Moffett Park, and consists of several office and manufacturing buildings. In recent years, several other high-technology businesses have developed corporate campuses in Moffett Park, including Yahoo Inc. and Network Appliance. The City's Fire Station #5 is located at the southwest corner of Mathilda Avenue and Lockheed Martin Way, and the Onizuka Air Force Base is located south of the fire station on the southeast side of Lockheed Martin Way. State Route 237 is located approximately ¼ mile further south.

The majority of existing land uses in the proposed Moffett Park Specific Plan area are classified by the City's GIS database as industrial uses. These industrial uses include occupancy and use of buildings and facilities for office, research, general manufacturing, and other uses compatible with the district including, hotels and motel, restaurants, financial uses, retail sale/services, and professional services.





### 3.8.1 Land Use Policies and Regulations

#### General Plan

The Sunnyvale General Plan was first adopted in 1957. The Land Use and Transportation Element was most recently amended in 1997. The General Plan is the comprehensive planning document governing development within the City, and articulates the community's vision for the future through a description of goals, policies, and actions. The Land Use and Transportation Element is part of the Sunnyvale General Plan, and contains a vision statement for the City that reflects the City's general desire for a strong economy, efficient transportation, appropriate housing and community character. The Vision Statement is summarized as follows in the Land Use and Transportation Element:

*Looking forward, Sunnyvale is a dynamic community with a strong positive image and identifiable community character consisting of varied and attractive residential and business/industrial neighborhoods. All neighborhoods are served by a viable, convenient transportation system. A strong economy supports the desired level of City services. The city has a variety of housing served by diverse and well-maintained parks, open space and recreational facilities. Within the region, Sunnyvale is an active participant in ensuring and sustaining its high quality of life.*

The Land Use and Transportation Element contains many goals, policies and actions related to strong economy, efficient transportation, and community character that apply to the proposed Specific Plan. The following are the most relevant of these goals, policies and actions to the proposed project:

Goal C-1: *Preserve and enhance an attractive community, a positive image and a sense of place that consists of distinctive neighborhoods, pockets of interest, and human scale development. In support of this goal, Policy C1.1 seeks to "Recognize that the City is composed of residential, industrial and commercial neighborhoods, each with its own individual character, and allow change consistent with reinforcing positive neighborhood values." In turn, Action Statement C1.2.2 encourages the development of diversified building forms and intensities, and Action Statement C1.2.3 encourages the development of multi-modal transportation centers.*

Goal N-1: *Preserve and enhance the quality character of Sunnyvale's industrial, commercial, and residential neighborhoods by promoting land use patterns and related transportation opportunities that are supportive of the neighborhood concept. Policy N1.7 encourages supporting the location of convenient retail and commercial services (e.g., restaurants and hotels) in industrial areas to support businesses, their customers and their employees. Policy N1.8 seeks to cluster high intensity industrial uses in areas with easy access to transportation corridors. Action Statements in support of these policies include N1.8.1, which requires high quality site, landscaping, and building design for higher intensity industrial development.*

Goal C-3: *Attain a transportation system that is effective, safe, pleasant, and convenient. Policies in support of this Goal include Policy C3.2, which encourages the integration of the use of land and the transportation system, and Policy C3.5, which*

encourages supporting of a variety of transportation modes. Corresponding Action Statements include: C3.2.1, which emphasizes allowing land uses that can be supported by the planned transportation system; C3.2.3, which encourages mixed use developments that provide pedestrian scale and transit oriented services and amenities; C3.5.1, encouraging the promotion of alternate modes of travel to the automobile; C3.5.3, emphasizing support for land uses that increase the likelihood of travel mode split; C3.5.4, supporting maximizing the provision of bicycle and pedestrian facilities; C3.5.7, which seeks to ensure safe and efficient pedestrian and bicycle connections to neighborhood transit stops; and C3.5.8, which encourages working to improve bus service within the City, including linkages to rail.

Goal C-4: *Sustain a strong local economy that contributes fiscal support for desired City services and provides a mix of jobs and commercial opportunities.* Policy C4.1 supports this Goal by seeking to “*Maintain a diversity of commercial enterprises and industrial uses to sustain and bolster the local economy.*” In addition, the Goal is supported by Policy C4.2, which strives to “*Balance land use and transportation system carrying capacity necessary to support a vital and robust local economy.*” Action Statements that bolster these policies include C4.1.1, which supports permitting a variety of commercial and industrial uses, including Industrial/Research and Development, and C4.1.2, which encourages businesses that provide a range of job opportunities. There are two additional Action Statements that have significance for the project. One is C4.2.1, permitting industrial FARs up to 35 percent (and allowing warehouse FARs up to 50 percent), and permitting higher FARs in the Futures intensification areas. The other is C4.2.2, which encourages studying the criteria to allow industrial FARs up to 45 percent by Use Permit in 35 percent zones, considering at a minimum including: 1) the effect of the project on the regional or City-wide roadway system (e.g. strategies for reducing travel demand, proximity to transit centers, peak hour traffic generation); 2) minimum development size; 3) redevelopment and/or lot consolidation; 4) that the project is intended primarily for a single user or has common/shared management; 5) mitigation of housing impacts; and 7) the development will result in an overall positive community benefit.

Goal R-1: *Protect and sustain a high quality of life in Sunnyvale by participating in coordinated land use and transportation planning in the region.* Policy R1.7 supports this Goal by seeking to “*Contribute to efforts to minimize region-wide average trip length, and single-occupant vehicle trips.*” Action Statements implementing this Policy include R1.7.1, and R1.7.2, which encourage locating higher intensity land uses and developments so that they have easy access to transit services, and supporting regional efforts which promote higher densities near major transit and travel facilities, without increasing the overall density of land usage. Policy R1.10 encourages supporting land use planning that complements the regional transportation system, and is implemented by Action Statements R1.10.2 and R1.10.3 which seek to support alternative transportation services, such as light rail, buses, and commuter rail, through appropriate land use planning, and encourage mixed uses near transit centers.



The General Plan also contains a Socio-Economic Element, which addresses issues relating to health, social services, the economy, employment and education. An important goal outlined in this sub-element is Goal 5.1.B which states: “*Maintain and establish policies that promote a strong economy which provides economic opportunities for all Sunnyvale residents within existing environmental, fiscal and land use constraints.*” Policies in support of this Goal include 5.1.B.1 and 5.1.B.2, which encourage providing existing employers with opportunities to expand employment within land use constraints and in accordance with regional planning goals, and promote participation in partnerships with local industry and businesses in order to facilitate communication and address mutual concerns.

The Environmental Management Element of the General Plan contains Goals, Policies and Action Statements related to water resources, sanitary sewers and the Sunnyvale Water Pollution Control Plant, solid waste, surface runoff, noise, and air quality. The goals and policies most relevant to the proposed project are as follows:

Goal 3.4.A: *Assure the reasonable protection of beneficial uses of creeks and South San Francisco Bay, established in the Regional Board’s Basin Plan, and protect environmentally sensitive areas.* Policies 3.4.A.2 and 3.4.A.3 emphasize compliance with regulatory requirements, participation in processes that may result in modifications to regulatory requirements, and implementation of Best Management Practices (BMPs) to reduce the discharge of pollutants in stormwater to the maximum extent practicable.

Goal 3.4.D: *Minimize the quantity of runoff and discharge of pollutants to the maximum extent practicable by integrating surface runoff controls into new development and redevelopment land use decisions.* Policies 3.4.D.1 and 3.4.D.2 support this Goal by requiring the consideration of water quality impacts caused by stormwater runoff, as well as a development site’s potential to detain excess runoff, as part of land use and development decisions. These policies also require the implementation of appropriate BMPs, including detention facilities, to minimize the volume and rate of runoff.

### Zoning Ordinance

The properties contained within the proposed Moffett Park Specific Plan area are designated M-3 and M-S by the Sunnyvale Zoning Ordinance (Title 19 of the Municipal Code). The M-3 general industrial district, which occupies the vast majority of the Specific Plan area (approximately 1,141 acres) allows for the construction, use and occupancy of buildings and facilities for office, research, general manufacturing, and other uses compatible with the district. The M-S industrial and service district, comprising approximately 20 acres within the Specific Plan area, also allows offices and research facilities, but only limited manufacturing uses. This district allows more commercial uses, including hotels and motels, restaurants, financial uses, retail sales and services, professional services and other uses compatible with the district.

Other sections of Title 19 that are pertinent to the proposed Specific Plan include Chapter 19.32 - *Building Heights, Lot Coverages and Floor Area Ratios*; Chapter 19.44 – *Signs*; Chapter 19.46 *Off-Street Parking and Loading*; Chapter 19.48 - *Fences, Distances Between Buildings and Extensions*; and Chapter 19.52 - *Required Artwork in Private Developments*. Specific requirements of these chapters that apply to the project include the following:

Chapter 19.32 - Building Heights, Lot Coverages and Floor Area Ratios - The M-3 and M-S districts allow a maximum building height of 8 stories or 75 feet, a maximum lot coverage of 45 percent, and a maximum floor area ratio of up to 35 percent without a Use Permit.

Chapter 19.44 – Signs – Development within the Moffett Park Specific Plan area will be required to conform to all of the applicable specifications regulating the dimensions, content, design, illumination and quantity of signage, as provided in this chapter.

Chapter 19.46 - Off-Street Parking and Loading - Provision b) of Subsection 19.46.030 states that “A minimum of ten percent of all parking places provided for on site within the M-S (industrial and service) district or M-3 (general industrial) district in connection with any industrial use shall be permanently reserved, by means of lot markings, signs, or other techniques, for the exclusive use of carpool vehicles. These reserved carpool spaces shall be those nearest the principal building on the premises.”

Provision c) further states: “In lieu of up to five percent of required vehicle parking, secured bicycle parking may be allowed in industrial areas as follows:

- (1) Eight secured bicycle parking spaces for one vehicle space; or
- (2) One shower and dressing room with clothing lockers for bicycle commuters for two vehicle spaces; or
- (3) A combination of bicycle parking and showers/locker rooms. Up to five percent reduction of vehicle parking shall be considered through the miscellaneous plan permit process. Additional secured bicycle parking in lieu of vehicle parking shall be reviewed by the planning commission using the use permit process.”

Industrial and commercial development within the Specific Plan area would also be subject to the requirements of Subsection 19.46.050 (Parking Standards), and to the requirements of Subsections 19.46.080 through 19.46.160 (parking and loading area standards).

### ***Thresholds of Significance***

The following thresholds of significance are based on Appendix G of the State CEQA Guidelines. For the purposes of this project, land use impacts would be considered significant if the project were to:

- ❖ Physically divide an established community.
- ❖ Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- ❖ Conflict with any applicable habitat conservation plan or natural community conservation plan.

In addition to these CEQA thresholds, the General Plan land use policies and Zoning Ordinance provisions described in the previous paragraphs are also used to determine the potential significance of impacts associated with implementation of the proposed Specific Plan.

### 3.8.2 Land Use Impacts and Mitigation Measures

**IMPACT 3.8-A**      **Land Use Compatibility/Surrounding Land Use: The proposed Specific Plan would intensify the level of development within the boundaries of the Specific Plan, potentially increasing traffic, noise, and aesthetic impacts to existing land uses surrounding the site (Less Than Significant Impact).**

The Moffett Park Specific Plan proposes a development program for the Moffett Park area that would accommodate a mix of land uses including corporate office, manufacturing, warehouse, small-scale retail, hotel, restaurant and other ancillary support uses. Much of the retail and commercial use is envisioned as “office-serving commercial/retail,” and would include services, that are generally associated with office and research park development, such as dry cleaners, cafes, postal outlets and other daytime amenity-providing services. These office-serving uses are essential to internalizing traffic trips within the Specific Plan area, and area intended to result in reduced traffic impacts on the surrounding area.

With implementation of the proposed Specific Plan, future development projects could potentially conflict with existing land uses in the Plan area. For example, the Specific Plan would provide the opportunity for property owners to reutilize and intensify land uses where possible, achieving up to a maximum .70 FAR for certain parcels in the Transit Core and .50 FAR in certain areas of the “Remainder” zones. This FAR would represent a greater intensity of land use than many of the existing Moffett Park developments built in the late 1960’s through 1980’s at FAR’s of .35 and lower. Potential land use compatibility issues that could arise would include such impacts as aesthetics (light and glare, scale, etc.), parking demand, and resulting impacts from the introduction of new uses, such as childcare or office-serving commercial uses.

However, to ensure functional and visual compatibility among land uses permitted with the Moffett Park Specific Plan area with existing developed land uses, the Specific Plan includes development standards that describe specific site planning requirements, and references Citywide and industrial guidelines as the primary source of guidance for reviewing site-specific development proposals within the boundary of the Specific Plan area. The guidelines and standards promulgated in the proposed Moffett Park Specific Plan will ensure the successful integration of the new development with the existing manufacturing, industrial and commercial districts surrounding the Specific Plan boundary.

Additionally, the Moffett Park Specific Plan would be compatible with the neighboring community. The land uses proposed by the Moffett Park Specific Plan are designed to be both internally compatible, and compatible with the surrounding land uses. Specific aesthetic, noise and traffic impacts of the Plan are addressed in Sections 3.1, 3.9 and 3.12, respectively.

**Mitigation 3.8-A**      ***Land Use Compatibility/Surrounding Land Use: Mitigation Is Not Required.***

**IMPACT 3.8-B**

**Land Use Policy/Regulatory Consistency: The proposed project conforms to the goals and policies of the Sunnyvale General Plan's Land Use and Transportation Element, Socio-Economic Element, Environmental Management Element, and other local land use plans. (Less Than Significant Impact).**

The proposed Specific Plan is consistent with the goals and policies of the General Plan's Land Use and Transportation Element relating to the coordination of land use and transportation planning in the region, the preservation and enhancement of the City's industrial/technological community character, the establishment of an efficient and convenient transportation system, and support of the industrial neighborhood concept.

The Land Use Plan for the Moffett Park Specific Plan incorporates the goals of the Sunnyvale General Plan by providing for the development of three distinct planning districts as described below. The proposed Specific Plan Land Use Plan (Table 3.8-1, below) would create the following districts that would facilitate the goals and policies of the General Plan's Land Use and Transportation Element:

**Moffett Park – Transit Oriented Development (MP-TOD)** – The purpose of the BP-TOD district is to encourage higher intensity uses that can best take advantage of locations in close proximity to the Tasman light rail corridor, such as corporate office uses. The MP-TOD zoning district is intended for the construction, use and occupancy of buildings for office, research, limited manufacturing, hotels, restaurants, financial institutions, retail sales and services, professional services and similar compatible uses. Accessory uses for the benefit of onsite employees (e.g., recreation facilities, cafeterias) are also allowed and encouraged. To encourage higher intensity of uses within this land use district, the allowable floor area ratio is 0.55 FAR. The floor area ratio may be allowed to increase to a maximum of 0.70 when additional on-site amenities are provided and measures are implemented to mitigate the impacts of the increased building intensity.

**Moffett Park – Industrial (MP-I)** – The MP-I zoning district is intended for the construction, use and occupancy of buildings for office, research, limited manufacturing, hotels, restaurants and financial institutions. Accessory uses for on-site benefits such as recreation and cafeterias are allowed and encouraged. The allow floor area ratio is 0.40 FAR. Increases in development intensity up to 0.50 FAR are allowed, provided specific conditions are met.

**Moffett Park - Commercial (MP-C)** – The MP-C district is intended for the construction, use and occupancy of buildings for hotels, restaurants, retail sales and services, and professional services.

As noted above, the proposed Specific Plan has established a 2,000,000 square foot development reserve that may allow future project applicants to increase their allowed development intensity up to the FAR intensities identified in Table 3.8-1. The minimum parcel size to access the development reserve shall be 10,000 square feet. At the time of publication of this Draft EIR, the recently approved Juniper Networks Corporate Campus has been allocated approximately 600,000 square feet of the development reserve for intensified development up to .70 FAR in the MP-TOD District.

**Table 3.8-1  
Specific Plan Land Use Plan Summary Table**

<b>Specific Plan Sub-District</b>	<b>Parcel Acreage</b>	<b>Allowable Intensity (FAR)<sup>1</sup></b>	<b>Development Potential: Total Allowed Building Square-Footage<sup>2</sup></b>
MP-TOD	462 ac	.55 FAR	11.06 million sq. ft.
MP-I	663 ac	.40 FAR	11.55 million sq. ft.
MP-C	13 ac	.40 FAR	.25 million sq. ft.
Development Reserve <sup>3</sup>	--	--	1.47 million sq. ft.
Other <sup>4</sup>	18 ac	--	--
<b>Total</b>	<b>1,156 ac</b>	<b>N/A</b>	<b>24.33 million sq. ft.</b>
Notes: 1. Allowable development intensities may increase up to .70 FAR in the MP-TOD district and .50 FAR in the MP-I district. All development intensity increase in these districts may not exceed 2,000,000 square-feet. 2. Total Development potential excludes existing SCVWD right-of-ways and U.S. Military Parcels, and includes projects that have been recently approved, but not yet constructed. 3. Development Reserve may allocate square footage to any parcel in MP-TOD and MP-I Zones. 4. Includes right-of-way, streets, etc.			
Source: RBF Consulting, Draft Moffett Park Specific Plan, August 2002.			

*Prior Development Reserves Invalid.* In 1999, the City of Sunnyvale established a development reserve within the Moffett Park Specific Plan project area to draw from when office/industrial projects proposed to exceed the General Plan allowable .35 FAR. For the purpose of the proposed Specific Plan, any previous Development Reserve would be considered invalid upon the date of adoption of the Moffett Park Specific Plan.

The land use densities proposed in the proposed Moffett Park Specific Plan (summarized in Table 3.8-1, above), and inclusion of design guidelines and development standards in the Specific Plan will ensure conformance with the General Plan's numerous Policies and Action Statements (as mentioned above in Section 3.8.2 *Land Use Policies and Regulations*) that encourage locating higher intensity land uses and developments within easy access of transit services, and promote diversified building forms and multi-modal transportation centers. The proposed inclusion of commercial shops and services is consistent with policies that encourage the location of convenient retail and commercial services (e.g., restaurants and hotels) in industrial areas to support businesses, their customers and their employees, as well as with policies promoting mixed-use developments that provide pedestrian scale and transit oriented services and amenities. In addition, by clearly spelling out design standards that are consistent with Citywide design standards, the proposed Specific Plan is consistent with policies requiring high quality site, landscaping, and building design for higher intensity industrial development.

The existing General Plan allows for development intensities up to a maximum of .35 FAR for office uses. As described above, the Land Use and Transportation Element of the City's General Plan includes policies that seek to balance the land use and transportation system carrying capacity in order to support a vital and robust local economy. These policies are supported by Action Statements permitting higher FARs in intensification areas. Review Criteria for projects greater than 35 percent FAR were adopted in 1999. The criteria require projects to address issues such as community character, traffic and air quality, site design and architecture, and economic, fiscal and community benefit. The criteria have been used to

analyze projects that were proposed and ultimately approved ranging in FAR's from .36 to .56. According to the Sunnyvale General Plan, almost 93 percent of the industrial parcels in the City were developed by 1997. Although FAR's ranged from .16 to 1.43, approximately 58 percent of the parcels in the industrial area were developed with less than a .35 FAR.

Implementation of the Moffett Park Specific Plan could potentially increase the allowable development intensities from those currently allowed. The Specific Plan would facilitate the revision of the current zoning for the project area, allowing FARs as high as 70 percent for areas located adjacent to the light rail line that consist primarily of corporate office uses, manufacturing and warehousing, and small scale, locally-serving retail uses that provide pedestrian amenities and encourage transit usage. While the increased building heights would create distinctly visible elements within the Moffett Park area, there are other mitigating circumstances associated with vertical expansion that would increase neighborhood compatibility. These include the ability to provide larger setbacks and more landscaping, and to reduce the amount of impermeable surface area on the site, as opposed to proposing a more horizontal style of development. All new development proposals would be subject to the City's Use Permit process, which would involve site design and architectural review by City staff and public hearings to allow community input in the decision-making process.

The proposed project is consistent with the Socio-economic sub-element, which promotes a strong local economy by providing increased economic opportunities, including providing existing employers with opportunities to expand employment. In addition, the proposed Specific Plan would facilitate employment from other businesses new commercial service establishments.

The proposed Specific Plan is consistent with the Policies and Action Statements of the Environmental Management sub-element by addressing potential water quality impacts caused by stormwater runoff, and by proposing strategies designed to reduce traffic congestion, energy consumption and air pollution.

The Specific Plan is also consistent with the goal of promoting convenient and efficient alternatives to the automobile by including a Transportation Demand Management (TDM) system, which promotes the use of bicycles, and supports shuttles, ride-sharing programs, carpools and vanpools, subsidized transit passes and other employee incentives.

The purpose of the trip reduction requirements is to reduce the demand for automobile commute trips by ensuring that the design of major nonresidential development projects accommodates facilities for alternative modes of transportation.

The overall TDM goal in the proposed Moffett Park Specific Plan area is an actual 20% reduction in vehicle trips across the board. Future development projects attempting to access the 2,000,000 square foot development reserve must address these automobile-alternative goals through on-site TDM programs, and demonstrate how individual development proposals "fit" into the TDM goals and strategy for Moffett Park.

If a future development proposal is accepted by City Planning staff, not more than 180 days after the adoption of this Specific Plan, or within six months after an employer qualifies under the requirements of this provision, the employer shall develop a TDM program and shall submit to the City of Sunnyvale a description of that program for review. The TDM program shall provide a description of the strategies to be employed to reduce work-related trips and vehicle miles traveled



Under the TDM requirements being proposed with the Moffett Park Specific Plan, nonresidential development projects, and the nonresidential portion of mixed-use development projects, which exceed 25,000 square feet of gross floor area, would be required to meet the following provisions.

1. **Carpool and Vanpool Parking.** A minimum of 10% of the employee parking spaces shall be reserved for and designated as preferential parking for carpool and vanpool vehicles. Such parking area shall be in a location more convenient to the place of employment than parking spaces for single occupant vehicles, and shall be located as close as practical to the employee entrance.
2. **Bicycle Parking.** Bicycle parking shall be provided on site. In addition, the bicycle parking shall be located near the employee entrance and shall be conveniently accessible from the external circulation system.
3. **Transportation Information Display.** A transportation information display, such as a bulletin board, display case or kiosk, shall be located on the development site, situated where it can be seen by the greatest number of employees. Information displayed shall include without limitation current maps, routes and schedules for public transit routes serving the development; telephone number of referrals for transportation information including the numbers for the regional ridesharing agency and local transit operators; ridesharing promotional materials; bicycle routes and facility information; and a listing of facilities available for carpoolers, vanpoolers, bicyclists, transit riders, and pedestrians at the development.

Nonresidential development projects, and the nonresidential portion of mixed-use development projects, which exceed 100,000 square feet of gross floor area, shall meet the requirements of the preceding subsection, and the following additional requirements.

1. **Carpool and Vanpool Loading Area.** A passenger loading area for carpool and vanpool vehicles shall be provided on site. At a minimum the area shall be of sufficient size to accommodate the number of waiting vehicles equivalent to 10% of the required number of carpool and vanpool spaces.
2. **Connecting Sidewalks.** As a requirement of all new development, designated pedestrian sidewalks or paths shall be provided on the development site between the external pedestrian system and each building in the development.
3. **Bus Stop Improvements.** Bus stop improvements, including bus pullouts, bus pads and right-of-way for bus shelters may be required as mitigation measures if a proposed development will have substantial traffic impacts

**Mitigation 3.8-B:**      *Land Use Policy/Regulatory Consistency (Mitigation is Not Required).*

**IMPACT 3.8-C**      **Development Impacts:** Although construction of any one development and/or infrastructure improvement within the Moffett Park Specific Plan area would be short-term in any one location, long-term future development associated with the implementation of the Specific Plan, including on-site

construction and off-site infrastructure improvements, may result in temporary impacts associated with traffic congestion, air emissions, noise increases, view disruptions, and public safety. Each of the listed impacts is discussed in their respective sections of this Draft EIR. Land use impacts associated with construction activities are a temporary nuisance that are considered to be a less-than-significant impact (Less Than Significant Impact).

Construction-related activities that would affect adjacent land uses are discussed in Sections 3.1 (Aesthetics), 3.9 (Noise) and 3.12 (traffic), respectively. Although the build out of the Specific Plan area would occur in various phases throughout several years, anticipated construction impacts would be short-term in nature, and would not be considered to create significant impacts.

**Mitigation 3.8.C**      *Construction Impacts: Mitigation Is Not Required.*

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### 3.8.3 Conclusion

As discussed in the preceding sections, the potential land use impacts of the future development projects under the direction of the Moffett Park Specific Plan would be less than significant, and mitigation is not required.



## 3.9 NOISE

### 3.9.1 Environmental Setting

Noise is generally defined as unwanted sound. For most people, the unusual consequences of noise are associated with speech interference, distractions at home and at work, disturbance of rest and sleep, and disruption of recreational pursuits.

#### STATE OF CALIFORNIA

The State Office of Noise Control, established in February 1976, drafted the *Guidelines for the Preparation and Content of Noise Elements of the General Plan*, to provide guidance for the acceptability of projects within specific Ldn/CNEL contours. Residences are “conditionally acceptable” between 60 and 75 dBA Ldn/CNEL and “normally unacceptable” in areas exceeding 70 dBA Ldn/CNEL. However, the State stresses that these guidelines can be modified to reflect sensitivities of individual communities to noise. The State Office of Noise Control Guidelines have been adapted by the City of Sunnyvale and are included in its General Plan. These guidelines are shown below in Table 3.9-2, *City Land Use Noise Compatibility*, under the City Noise Standards discussion.

#### CITY OF SUNNYVALE

The City of Sunnyvale’s General Plan Noise Element identifies guiding policies regarding noise. Policies in the Noise Element applicable to the proposed project include:

- ❖ Use local traffic management techniques to reduce or protect noise levels.
- ❖ Apply conditions to discretionary land use permits that limit hours of operation, hours of delivery and other factors with affect noise.
- ❖ Regulate select single-event noises and periodically monitor the effectiveness of the regulations.

Additionally, the City of Sunnyvale includes exterior noise standards in its Municipal Code but does not specify an interior noise standard<sup>1</sup>.

#### NOISE SCALES AND DEFINITIONS

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

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<sup>1</sup> Based on telephone conversation with Joan Navarro, Planner, City of Sunnyvale Neighborhood Preservation Department, November 12, 2001.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples, of various sound levels in different environments are shown in Table 3.9-1, *Sound Levels and Human Response*.

<b>Table 3.9-1 Sound Levels and Human Response</b>		
<b>Noise Source</b>	<b>Noise Level dB(A)</b>	<b>Response</b>
	150	
Carrier Jet Operation	140	Harmfully Loud
	130	Pain Threshold
Jet Takeoff (200 ft.)	120	
Unmuffled Motorcycle, Auto Horn (3 ft.) Rock'n Roll Band, Riveting Machine	110	Maximum Vocal Effort, Physical Discomfort
Loud Power Mower, Jet Takeoff (2000 ft.), Garbage Truck	100	Very Annoying Hearing Damage (Steady 8-Hour Exposure)
Heavy Truck (50 ft.), Pneumatic Drill (50 ft.)	90	
Alarm Clock, Freight Train (50 ft.) Vacuum Cleaner (10 ft.)	80	Annoying
Freeway Traffic (50 ft.)	70	Telephone Use Difficult
Dishwashers Air Conditioning Unit (20 ft.)	60	Intrusive
Light Auto Traffic (100 ft.)	50	Quiet
Living Room/Bedroom	40	
Library/Soft Whisper (15 ft.)	30	Very Quiet
Broadcasting Studio	20	Just Audible
	10	Threshold of Hearing
Source: Melville C. Branch and R. Dale Beland, <i>Outdoor Noise in the Metropolitan Environment</i> , 1970 (p. 2), and others.		

Many methods have been developed for evaluating community noise to account for, among other things:

- ❖ The variation of noise levels over time;
- ❖ The influence of periodic individual loud events; and
- ❖ The community response to changes in the community noise environment.

The simplest and most commonly used method to evaluate sound level is the day/night average level or Ldn. The Ldn is a measure of the 24-hour average noise level to evaluate the sound level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the Leq, or equivalent sound level. The Leq can be thought of as the steady sound level which, in a stated period of time, would contain the same acoustic energy as the time-varying sound level during the same period. The Ldn is calculated by averaging the Leq's for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 p.m. to 7:00 a.m.) by 10 dBA to account for the increased sensitivity of people to noises that occur at night.

People tend to respond to changes in sound pressure in a logarithmic manner. In general, a 1 dB change in the sound pressure levels of a given sound is detectable only under laboratory conditions. A 3 dB change in sound pressure level is considered a "just detectable" difference in most situations. A 5 dB change is readily noticeable and a 10 dB change is considered a doubling (or halving) of the subjective loudness. It should be noted that a 3 dBA increase or decrease in the average traffic noise level is realized by a doubling or halving of the traffic volume; or by about a 7 mile per hour (mph) increase or decrease in speed.

For each doubling of distance from a point noise source, the sound level will decrease by 6 dBA. In other words, if a person is 100 feet from a machine, and moves to 200 feet from that source, sound levels will drop by approximately 6 dBA. For each doubling of distance from a line source, like a roadway, noise levels are reduced by 3 to 5 decibels, depending on the ground cover between the source and the receiver.

## NOISE STANDARDS

It is difficult to specify noise levels that are generally acceptable to everyone. What is annoying to one person may be unnoticed by another. Standards may be based on documented complaint activity in response to documented noise levels, or based on studies on the ability of people to sleep, talk, or work under various noise conditions. All such studies, however, recognize that individual responses vary considerably. Standards usually address the needs of most of the general population. With this caution in mind, noise standards for planning purposes examine both outdoor and indoor noise levels acceptable for different uses. The standards relate to existing conditions in a city so that they are realistically enforceable and consistent with a city's general plan objectives. The outdoor noise environment throughout the United States varies considerably. Outdoor Day-Night Average (Ldn) sound levels can be as low as 30 to 40 dBA (Ldn) in wilderness areas and as high as 85 to 90 dBA (Ldn) in noisy industrial urban areas.

*State Noise Standards:* The State Office of Noise Control, in its Land Use Compatibility Standards, defines an outdoor level of Ldn 60 dB or less as being "normally acceptable" for residential uses, schools, libraries, churches, and hospitals. The intent of the 60 dBA (Ldn) level is partly to provide acceptable outdoor levels. A 60 dBA (Ldn) is generally considered to be an appropriate exterior level near roadways where outdoor use is a major consideration, such as in backyards, recreation areas in residential projects, and many park areas. A second intent of the 60 dBA (Ldn) standard is to provide, either through design, location, or insulation, for interior noise levels no greater than 45 dBA (Ldn), which is generally accepted as the maximum acceptable noise level for most indoor residential activities.

State Noise Insulation Standards are consistent with the Office of Noise Control's residential Land Use Compatibility standards. In 1974, the State adopted Noise Insulation Standards (Title 25, State Administrative Code) for new hotels, motels, and dwellings other than single-family detached dwellings.

Those standards established 45 dBA (Ldn) as the maximum interior noise level. Where exterior sound levels are 60 dBA (Ldn) or above, acoustical analyses for projects are required to ensure that the structure has been designed to limit outside noise to the allowable interior levels. The State Noise Insulation Standards also include standards to be met for sound transmission between units. One of the purposes of requiring noise elements in local general plans is to help implement these interior insulation regulations by identifying where special remedial measures are required.

*City Noise Standards:* In Sunnyvale, Ldn levels in residential areas are as low as 45 dBA (Ldn) in quiet valleys shielded from major roads, to as high as 65 to 75 dBA (Ldn) along highway and major roads. To provide a satisfactory noise environment and to minimize complaints about community noise, the City has adopted standards for evaluating the compatibility of land uses with respect to outdoor and certain indoor noise levels. The purpose of the land use compatibility analysis is to screen projects that may require specific design considerations to mitigate noise impacts. The noise exposure contours are used in conjunction with the noise standards indicated on Table 3.9-2, *City Land Use Noise Compatibility*, to make such a determination.




The noise exposure levels indicated in Table 3.9-2 refer to the outdoor day/night average noise level (Ldn). A project in the “normally acceptable” category would be acceptable in terms of both its indoor/outdoor noise exposures without special noise abatement measures. Where outdoor noise exposure is less important, projects can be designed to provide acceptable interior environments in the “conditionally acceptable” category. This may involve providing air conditioning so that windows can remain closed, or, at higher levels, sound rated windows and walls. Acoustical reports are recommended to be required where the noise exposure is “conditionally acceptable” or “normally unacceptable.”

## EXISTING NOISE ENVIRONMENT

Major roadways cause most of the ambient noise in Sunnyvale. Between the year of 1986 and 1996, sound walls were installed along Interstate 280, U.S. Highway 101, State Highway 82, and along many major local roadways to mitigate traffic noise levels. Other noise sources include aircraft from Moffett Federal Airfield (MFA), light rail lines, freight rail lines, and industrial operations.

Existing ambient noise levels in the proposed Specific Plan area are generated by vehicle traffic along State Highway 237, Mathilda Avenue and Caribbean Drive, light passenger train operations along the Santa Clara Valley Transportation Authority (VTA) Light Rail Corridor that runs along Moffett Park Drive, Mathilda Avenue and Java Drive, aircraft flying to and from the MFA, intermittent test operations at the NASA Ames Research Center within the MFA, and general industrial operations.

Table 3.9-3, *Existing Specific Plan area Noise* indicates the existing noise within the proposed Specific Plan area. This noise is primarily from vehicular sources and VTA light passenger train operations. To establish the existing average noise levels within the proposed Specific Plan area, ambient noise levels were recorded in August 2001 by using a Larson Davis Model 820 (Type 1) noise meter. Fifteen-minute Leq, Lmin and Lmax noise levels were recorded at 7 locations along roadways within the proposed Specific Plan area.

Table 3.9-2 City Land Use Noise Compatibility						
Land Use Category	Exterior Noise Exposure LDN or CNEL, DBA					
	55	60	65	70	75	80
Residential, Hotels, Motels						
Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds						
Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches						
Office Buildings, Commercial and Professional Businesses						
Auditoriums, Concert Halls, Amphitheaters						
Industrial, Manufacturing, Utilities, and Agriculture						
	Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.					
	Conditionally Acceptable: Specified land use may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features are included in the design.					
	Unacceptable: New construction or development should generally not be undertaken because mitigation is usually not feasible to comply with noise element policies					
Source: State Office of Noise Control, California Department of Health, as cited in the Sunnyvale General Plan, Noise Sub-Element, March 25, 1997.						

The southwest boundary of the proposed Specific Plan area is located approximately 500 feet from the southern end of the MFA runway. Based on the Noise Sub-Element of the City of Sunnyvale General Plan, a small area within the southwest portion of the proposed Specific Plan area is located between the 65 and 70 CNEL noise contours.

The NASA Ames Research Center operates on average approximately 2 hours per day and emits single-event noise in approximately 20-second intervals. According to existing sources, noise levels are up to 90 dBA in the approximate center of the MFA runway.<sup>2</sup> Applying the concept of noise attenuation by doubling of distance, noise generated by the NASA Ames Research Center is approximately 84 dBA at the northwest proposed Specific Plan boundary and decreases to approximately 78 dBA at the southwest proposed Specific Plan boundary.

<sup>2</sup> Figure 3.10-6 of the NASA Ames Research Center Administrative Draft EIR

Noise from industrial facilities and operations vary throughout the day and may reach intermittent highs up to 70 dBA CNEL. The existing facilities within the proposed Specific Plan area have been designed in such a manner as to mitigate noise through various building noise attenuation measures.

**Table 3.9-3  
Existing Noise**

Location	Lmax	Lmin	Leq
Caribbean Drive at Sports Complex (North Side of Roadway)	82.2	47.6	68.9
Caribbean Drive at Borregas Avenue (Northeast Corner)	85.3	49.5	69.3
Caspian Court (Cul-de-sac end)	67.4	48.5	52.3
E. Java Drive at Geneva Avenue (Southeast Corner)	82.1	51.0	66.2
3 <sup>rd</sup> Avenue at E Street (South Side of Roadway)	81.6	52.9	63.1
Moffett Park Drive at Crossman Avenue (Southwest Corner)	85.8	63.6	71.3
Baltic Way at Orleans Drive (Northeast Corner)	73.3	49.7	55.6
Notes: Lmax: Maximum noise level recorded over a given period of time (dBA) Lmin: Lowest noise level recorded over a given period of time (dBA) Leq: Average noise level over a given time period (dBA)			

## NOISE ATTENUATION METHODS

Exterior and interior ambient noise levels can be attenuated (reduced) by using noise barriers. Typical noise barriers include buildings, sound walls, and earthen berms, and grade separations between the noise source and the receptor.

Typical buildings reduce outdoor noise by 10 to 15 decibels with windows open and 20 to 24 decibels with windows closed (smaller windows and better construction will provide the higher end of the range). Typically, if outdoor noise is less than 60 dBA (Ldn), average wall and window construction would reduce noise levels below 45 dBA (Ldn), even with partially open windows. Closed windows and mechanical ventilation may be needed where outdoor noise levels are above 60 dBA (Ldn).

Noise walls typically provide a minimum noise reduction of 5 dBA, and up to 11 dBA reduction for a block wall in good repair having no gaps. A row of buildings between source and receiver provides up to a 5 dBA noise reduction, with a 1.5 dBA reduction for each additional row of buildings. Ambient noise levels can also be reduced by the construction of earthen berms and grade separations. The exact degree of noise attenuation depends on the nature and orientation of the structure, and distance to and between intervening barriers.

## SENSITIVE RECEPTORS

As there are no sensitive receptors located within close proximity of the proposed Specific Plan area, this noise analysis focuses primarily upon project impacts with respect to sensitive noise receptors located in proximity to roadways that would carry project-generated traffic. Sensitive receptors include land uses such as residential areas, parks, schools, churches, hospitals and elderly care facilities. Along project affected roadways, sensitive receptors include adjacent residential uses. Table 3.9-4, *Sensitive Receptors* includes sensitive receptor locations with respect to each roadway segment modeled for noise impacts.

**Table 3.9-4  
Sensitive Receptors**

<b>Roadway Segment</b>	<b>Sensitive Receptor Location From Edge of Roadway</b>
Lawrence Expressway between Tasman Drive and Lakehaven Drive	SFR located east and west of roadway
Mathilda Avenue between Ross Drive and Almanor Avenue	SFR located east of roadway
Mathilda Avenue between Almanor Avenue and Maude Avenue	MFR located east of roadway
Fair Oaks Avenue between Tasman Drive and Maude Avenue	SFR located east and west of roadway
Mathilda Ave. between Saratoga-Sunnyvale Rd. and El Camino Real	SFR located west of roadway
Notes: MFR= Multi-family residential SFR= Single-family residential Source: Aerial photo analysis, August 2002.	

## 3.9.2 Environmental Impacts and Mitigation Measures

### MOFFETT FEDERAL AIRFIELD

#### *Thresholds of Significance*

The following thresholds of significance are based on Appendix G of the State CEQA Guidelines. For the purposes of this project, a noise impact is considered significant if the project would:

- ❖ *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*

#### **IMPACT 3.9-A:**

**Noise Related to Moffett Airfield:** A small area within the southwestern portion of the proposed Specific Plan area is located between the 65 and 70 CNEL noise contours for the MFA. Additionally the western portion of the proposed Specific Plan area would be susceptible to single event noise from routine tests at the NASA Ames Research Center. Within this location, employees, patrons and members of the public within the proposed Specific Plan area would be subjected to excessive aircraft and rocket noise (Potentially Significant Impact If Not Mitigated).

The Moffett Federal Airfield is located to the west of the project area (see Exhibits 2-2 and 2-3). In 1994, the Navy ceased its operations at MFA. The MFA is now operated by the National Aeronautics and Space Administration (NASA). In 1995, approximately 24,000 annual aircraft flight operations (a single take-off and a single landing are each considered to be one flight operation) occurred at the MFA. Since the MFA is a federal facility, it is not subject to State or local aircraft noise control regulations. NASA has committed to using FAA regulations as a guide to manage noise. The Comprehensive Use Plan prepared by NASA projects the annual flight operations will increase to 80,000 by 2010. This number is



used as a baseline to compare new project impacts. NASA has not used the recent lower activity levels since flight operations could return to the historically higher levels at any time without further environmental review.

As discussed above, a small area within the southwestern portion of the proposed Specific Plan area is located between the 65 and 70 CNEL noise contours from the MFA. Noise from this location would gradually decrease to approximately 60 dB(A) CNEL in the vicinity of Mathilda Avenue and less as it travels eastward. Based on this, existing and future office and industrial uses in the southwestern portion as well as remaining areas within the proposed Specific Plan area would be considered “Normally Acceptable” by the City Noise Standard and therefore no impact would occur.

Also stated above, under the existing noise environmental discussion, the NASA Ames Research Center operates on average of 2 hours per day and emits single event noise in approximately 20-second intervals. Based on noise attenuation from doubling of distance, these events translate to single event noise levels of 84 and 78 dBA at the northwest and southwest Specific Plan area boundaries. Single event noise emissions are differed in the Noise Element of the City of Sunnyvale General Plan to the City of Sunnyvale Municipal Code. Section 19.42.030 of the City of Sunnyvale Municipal Code focuses mainly on single event noise with respect to residential sensitive receptors and states, “the City, however cannot regulate all single event noises and usually mediates complaints by relying upon generally stated public disturbance regulations.” Based on this there is no code or policy related to industrial-related single event noise.

Per the City noise standard (an adaptation of state standards and therefore satisfying the state standard), future land uses in the western portion of the proposed Specific Plan area may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features are included in the project design. The remaining portions of the proposed Specific Plan area would not require mitigation. With the detailed analysis of noise reduction requirements and noise insulation features incorporated in the design of future development projects in the western portion of the Specific Plan area, less than significant impacts would occur. Mitigation is required to reduce potentially significant impacts associated with existing MFA Operations to persons within the northwest and southwest locations of the proposed Specific Plan area.

**Mitigation 3.9-A**

***Noise Related to Moffett Airfield: Prior to issuance of building permits for future projects developed within the western portion of the Specific Plan area (Exhibit 3.9-1 describes Noise contours in western MPSP area), each property owner/developer shall be required to perform a final detailed analysis of interior noise reduction requirements and implement the required noise insulation features into the building design of the proposed buildings to ensure that noise levels are reduced to less than significant levels (Less Than Significant Impact With Mitigation).***



## LIGHT RAIL

### *Thresholds of Significance*

The following thresholds of significance are based on Appendix G of the State CEQA Guidelines. For the purposes of this project, a noise impact is considered significant if the project would:

- ❖ *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*
- ❖ *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

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**IMPACT 3.9-B:**      **Noise Related to the Light Rail:** The projected noise levels along the rail line within the existing Moffett Park Business Park range from 62 to 77 dBA. These projections were well under the 85 dBA criterion for allowable passerby noise levels. As such no mitigation measures are required. Increased development that would be facilitated by implementation of the proposed Specific Plan may increase ridership of the rail lines. However, given the criteria stated above, no additional noise impacts related to the rail transit system would occur (Less Than Significant Impact).

Light rail construction began in 1996. The light rail line runs along Java Drive from Fair Oaks Avenue to Mathilda Avenue. The light rail line then extends along Mathilda Avenue to Moffett Park Drive. From Moffett Park Drive, the light rail runs parallel to State Route 237. Groundborne vibration that would result from rail transit systems originates from the wheel/rail interface and is due to the vibration generated by the wheels rolling on the rails. The level of vibration is influenced by the degree of roughness or smoothness of the wheels and rails, the stiffness of the transit vehicle primary suspension, the speed of the train, the type of track fixation, and the geologic strata in which the alignment is situated. According the Tasman Corridor Project EIR (Santa Clara Valley Transit Authority, May 1995), the groundborne vibration would comply with applicable groundborne vibration criteria. Therefore, vibration impacts would be considered less than significant.

**Mitigation 3.9-B**      ***Noise Related to the Light Rail: Mitigation Is Not Required.***

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**EXHIBIT 3.9-1 (TO BE INSERTED WITH FINAL DRAFT EIR)**

## VEHICULAR NOISE

### *Thresholds of Significance*

The following thresholds of significance are based on Appendix G of the State CEQA Guidelines. For the purposes of this project, a noise impact is considered significant if the project would:

- ❖ *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*
- ❖ *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*
- ❖ *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*
- ❖ *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*
- ❖ *Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

### Relevant Policies and Action Statements

#### Noise Sub-Element

*Action Statement 3.6A.1a      Apply the Sunnyvale Municipal Code noise regulations in the evaluation of land uses and proposals. Acoustical analysis may be required to determine if mitigation measures shall be required for new development. If required, mitigation measures shall be incorporated into the new development that bring the proposed development into conformance with the noise regulations in the Sunnyvale Municipal code.*

*Action Statement 3.6B.1a.      Identify and mitigate roadway noise impacts of major roadways as part of local land use plans and proposals.*

### Municipal Code

*Section 19.24.020(b)      Operational noise shall not exceed 75 dBA at any point on the property line of the premises upon which the noise or sound is generated or produced; provided that the noise or sound level shall not exceed 50 dBA during daytime hours at any point on adjacent residentially zoned property. If the noise occurs during the nighttime hours and the enforcing officer has determined that the noise involves a steady, audible tone such as a whine, screech or a hum, or staccato or intermittent noise (e.g., hammering) or includes music or speech, the allowable noise or sound level shall not exceed 45dBA.*

### General Thresholds

General rules of thumb for community noise environments are that a change of over 5 dBA is readily noticeable and, therefore, is considered a significant impact. Changes from 3 to 5 dBA may be noticed by some individuals and are, therefore considered to constitute an adverse environmental impact since under these conditions sporadic complaints may occur. Changes in community noise levels of less than 3 dBA are normally not noticeable and are therefore considered less than significant.

The following two general rules of thumb expand upon the standards cited above by also considering the State land use compatibility categories to develop a comprehensive integrated impact evaluation criteria:

When noise levels before and after addition of the project remain within the same compatibility classification ("normally acceptable", "conditionally acceptable", "normally unacceptable", or "clearly unacceptable"): (a) increases of less than 3 dBA are regarded as having no impact, (b) increases equal to, or greater than 3 dBA but less than 5 dBA are regarded as having an adverse but not significant impact, and (c) increases of 5 dBA or greater are regarded as having a significant impact.

- ❖ *When noise levels increase after addition of the project and change compatibility classifications by an increase equal to, or greater than, 3 dBA, the impact is regarded as having an adverse and significant impact, (i.e., before the addition of the project, the noise level at a particular location falls within the "normally acceptable" category and after the addition of the project falls within the "conditionally acceptable" category).*

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**IMPACT 3.9-C:**      **Freeway Traffic Noise: Freeway noise from State Highway 237 would generate noise levels that would exceed City noise standards for the proposed Specific Plan area land uses (Less Than Significant Impact With Mitigation).**

The southern portion of the proposed Specific Plan area is located within the 75 CNEL noise contour of State Highway 237 as shown in the Noise Sub-element of the City of Sunnyvale General Plan. The area experiencing the highest noise levels is located in the southwest portion nearest to the crossing of U.S. Highway 101 and State Route 237 (see Exhibit 3.9-1). As such, the southern portion of the site would be considered "conditionally acceptable" per City noise standards. The remaining portions of the site would be considered "normally acceptable" by City noise standards.

Based on this, future development under the proposed Specific Plan that would be located in the southern portion of the Plan area may be permitted only after detailed analysis of the noise reduction requirements and needed noise insulation features are included in the site-specific project design. The remaining portions of the proposed Specific Plan area would not be required to mitigate. With the detailed analysis of noise reduction requirements and noise insulation features incorporated into the design of future developments within the southern portion of the Plan area, less than significant impacts would occur.

**Mitigation 3.9-C:**      ***Freeway Traffic Noise: Prior to the issuance of building permits for future projects developed under the guidance of the proposed Specific Plan, the property owner/developer of such projects shall perform a final detailed***

*analysis of interior noise reduction requirements and implement the required noise insulation features into the building design of the proposed buildings (in the southwestern portion of the proposed Specific Plan area) to ensure that noise levels are reduced to less than significant levels (Less Than Significant Impact With Mitigation).*

**IMPACT 3.9-D: Roadway Traffic Noise: The traffic generation anticipated at build-out of the proposed Specific Plan would increase traffic generated noise to residential sensitive receptors along project affected roadways (Less Than Significant Impact).**

Within most urban areas vehicular traffic is the primary source of noise. Noise was modeled using the Federal Highway Administration's RD-77-108 noise modeling program. The results are listed below in Table 3.9-5, *Noise on Project Affected Roadways*. The results shown in the table assume "hard site" conditions (conditions wherein noise would be transmitted directly to the receptor without attenuation from barriers, soundwalls or vegetation).

Given hard site conditions and based on the geometry at the analyzed segment of Lawrence Expressway, the existing noise level at 100 feet from the roadway centerline is 70.24 dB(A) CNEL and the 65 dB(A) contour is present at 407 feet from the roadway centerline. With the implementation of the Specific Plan, the noise level at 100 feet from the roadway centerline would be 71.41 dB(A) CNEL and the 65 dB(A) contour would be present 532 feet from the roadway centerline. Based on this, the difference between the existing conditions and proposed Specific Plan conditions noise levels at 100 feet from the roadway centerline would be 1.17 dB(A).

Analysis of the segment of Mathilda Avenue between Ross Drive and Almanor Avenue indicates that the existing noise level at 100 feet from the roadway centerline is 69.5 dB(A) CNEL and the 65 dB(A) contour is present at 357 feet from the roadway centerline. With the implementation of the Specific Plan, the noise level at 100 feet from the roadway centerline would be 70.46 dB(A) CNEL and the 65 dB(A) contour would be present 445 feet from the roadway centerline. Based on this, the difference between the existing conditions and proposed Specific Plan conditions noise levels at 100 feet from the roadway centerline would be 0.96 dB(A).

Analysis of the segment of Mathilda Avenue between Almanor Avenue and Maude Avenue indicates that the existing noise level at 100 feet from the roadway centerline is 70.28 dB(A) CNEL and the 65 dB(A) contour is present at 410 feet from the roadway centerline. With the implementation of the Specific Plan, the noise level at 100 feet from the roadway centerline would be 71.38 dB(A) CNEL and the 65 dB(A) contour would be present 529 feet from the roadway centerline. Based on this, the difference between the existing conditions and proposed Specific Plan conditions noise levels at 100 feet from the roadway centerline would be 1.10 dB(A).

Analysis of the segment of Fair Oaks Avenue between Tasman Drive and Maude Avenue indicates that the existing noise level at 100 feet from the roadway centerline is 67.67 dB(A) CNEL and the 65 dB(A) contour is present at 220 feet from the roadway centerline. With the implementation of the Specific Plan, the noise level at 100 feet from the roadway centerline would be 69.44 dB(A) CNEL and the 65 dB(A) contour would be present 331 feet from the roadway centerline. Based on this, the difference between the

existing conditions and proposed Specific Plan conditions noise levels at 100 feet from the roadway centerline would be 1.77 dB(A).

Analysis of the segment of Mathilda Avenue between Saratoga-Sunnyvale Rd. and El Camino Real indicates that the existing noise level at 100 feet from the roadway centerline is 67.95 dB(A) CNEL and the 65 dB(A) contour is present at 240 feet from the roadway centerline. With the implementation of the Specific Plan, the noise level at 100 from the roadway centerline would be 68.97 dB(A) CNEL and the 65 dB(A) contour would be present 303 feet from the roadway centerline. Based on this, the difference between the existing conditions and proposed Specific Plan conditions noise levels at 100 feet from the roadway centerline would be 1.02 dB(A).

Based on the fact that residential sensitive receptors may be within or closer than 100 feet of the roadway centerline, it is possible that such receptors would be “Conditionally Acceptable” or “Unacceptable” by the City’s Land Use Noise Compatibility Standards. Given the worst case condition wherein the compatibility classification is changed with the implementation of the proposed Specific Plan, based on the above cited “General Thresholds” a significant impact would occur if the noise increase were above 3 dB(A).

Table 3.9-5 Noise on Project Affected Roadways					
Roadway Segment	Conditions	CNEL* @ 100 ft. (Hard)	Distance From Roadway Centerline to 60, 65 & 70 CNEL (Hard) Contour Line		
			60 CNEL	65 CNEL	70 CNEL
Lawrence Expressway between Tasman Drive and Lakehaven Drive	Existing	70.24	*	407	129
	General Plan	70.08	*	392	124
	Preferred Alternative (Specific Plan)	71.41	*	532	168
	Cumulative	71.49	*	542	171
Mathilda Avenue between Ross Drive and Almanor Avenue	Existing	69.5	*	357	113
	General Plan	70.27	*	426	135
	Preferred Alternative (Specific Plan)	70.46	*	445	141
	Cumulative	70.36	*	435	137
Mathilda Avenue between Almanor Avenue and Maude Avenue	Existing	70.28	*	410	130
	General Plan	71.42	*	534	169
	Preferred Alternative (Specific Plan)	71.38	*	529	167
	Cumulative	71.44	*	536	169
Fair Oaks Avenue between Tasman Drive and Maude Avenue	Existing	67.67	697	220	70
	General Plan	69.2	991	313	99
	Preferred Alternative (Specific Plan)	69.44	*	331	105
	Cumulative	69.61	*	344	109
Mathilda Ave. between Saratoga-Sunnyvale Rd. and El Camino Real	Existing	67.95	759	240	76
	General Plan	68.97	960	303	96
	Preferred Alternative (Specific Plan)	68.97	960	303	96
	Cumulative	69.0	966	306	97
Notes: <ul style="list-style-type: none"> <li>• Hard site assumes an unimpeded pathway from noise source to receptor with no attenuation from barriers, topography or vegetation.</li> <li>• * Indicates that the distance from roadway centerline to contour line is over 999 feet.</li> </ul> Source: RBF Consulting, August 2002.					

The above comparison between the existing conditions and the proposed Specific Plan has shown that there would be no more than a 1.77 dB(A) increase. The greatest noise increase as shown in a comparison between the existing conditions and General Plan Conditions would be 1.53 dB(A) at the Fair Oaks Avenue segment between Tasman Drive and Maude Avenue. The greatest noise increase as shown in a comparison between existing conditions and cumulative conditions would be 1.94 dB(A) at the Fair Oaks Avenue segment between Tasman Drive and Maude Avenue. Based on the fact the none of the conditions and locations would result in an increase of more than 1.94 dB(A) less than significant impacts would occur.

**Mitigation 3.9-D:      *Noise Related Roadway Traffic: Mitigation Is Not Required.***

## CONSTRUCTION NOISE

### *Thresholds of Significance*

The following thresholds of significance are based on Appendix G of the State CEQA Guidelines. For the purposes of this project, an aesthetic impact is considered significant if the project would:

- ❖ *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*
- ❖ *Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?*

### City of Sunnyvale Municipal Code

16.08.110. Hours of construction--Time and noise limitations.

- (a) Construction activity not subject to Section 19.42.030 of this code shall be permitted between the hours of seven a.m. and six p.m. daily Mondays through Fridays. Saturday hours of construction shall be between eight a.m. and five p.m. There shall be no construction activity on Sundays or national holidays. Construction activity is permitted for homeowner permits when the work is being performed by the owner of the property between the hours of six a.m. and seven P.m. Mondays through Saturdays and eight a.m. and five p.m. on Sundays or national holidays
- (b) As determined by the chief building official:
  - (1) No loud environmentally disruptive noises, such as air compressors without mufflers, continuously running motors or generators, loud playing musical instruments, radios, etc., will be allowed where such noises may be a nuisance to adjacent properties.
  - (2) Where emergency conditions exist, construction activity may be permitted at any hour or day of the week. Such emergencies shall be completed as rapidly as possible to prevent any disruption to other properties.



- (3) Where additional construction activity will not be a nuisance to surrounding properties, based on location and type of construction, a waiver may be granted to allow hours of construction other than as stated in this section. (Ord. 2648-00 § 1: Ord. 2596-99 § 2 (part)).

**IMPACT 3.9-E:**      **Construction Noise Impact: Construction of future projects under the guidance of the proposed Specific Plan would not exceed applicable noise thresholds (No Impact).**

Table 3.9-6, Typical Construction Noise indicates the typical noise levels that may be present during construction activities.

Table 3.9-6 Typical Construction Noise (dBA)			
Construction Phase	50 Feet From Source	100 Feet From Source	500 Feet From Source
Ground Clearing	83-84	77-78	63-64
Excavation	71-89	65-83	51-89
Foundations	77	71	57
Erection	72-84	66-78	52-64
Finishing	74-89	68-83	54-69

The nearest sensitive receptors to the proposed Specific Plan area are located approximately 2,000 feet to the southeast and across CA 237 freeway. Based on the distance of these sensitive receptors and their location of being beyond the freeway, no on-site construction related noise impacts would occur.

**Mitigation 3.9-E:**      **Construction Noise Impact: Mitigation Is Not Required.**

### 3.9.3 Conclusion

Light rail and construction related noise would generate no significant impacts. Noise impacts associated with the MFA, freeway noise from the State Highway 237 and roadway noise along the modeled roadways would be less than significant with mitigation.